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ABSTRACT

The International Bureau of Education (IBE) is focusing its program activity on the adaptation of the content of education to the challenges of the 21st century. IBE's program has two components: integrating the concern of living together into the content of education; and adapting the content of education to cope with some of the challenges raised by a globalized world. This report is a compilation of presentations made during a regional workshop in New Delhi (India) in 1999 which catered to the concerns of South and South-East Asia. The report is divided into five parts. Part 1, "The Impact of Globalization on Curriculum Development," contains the keynote lecture which outlines the implications for education of the phenomenon of globalization and stresses the renewed urgency for curricula to promote peaceful coexistence and cooperation among pupils. Part 2, "Some Challenges for the Adaptation of Content Raised by the Principle of Learning to Live Together," presents key current concerns in curriculum reform. Part 3, "Interdisciplinarity, School-Based Management and Non-School Science Education: A Few Topics for Reflection by Curriculum Developers," includes three case studies from countries outside the Asian region. Part 4, "Current Trends in the Adaptation of Educational Content in South and South East Asia," focuses on the need for curriculum development to be a continuous holistic process aimed at real and meaningful change in the classroom. Part 5, "Country Papers on Curriculum Development from Selected States in South and South-East Asia," concludes the report. (BT)

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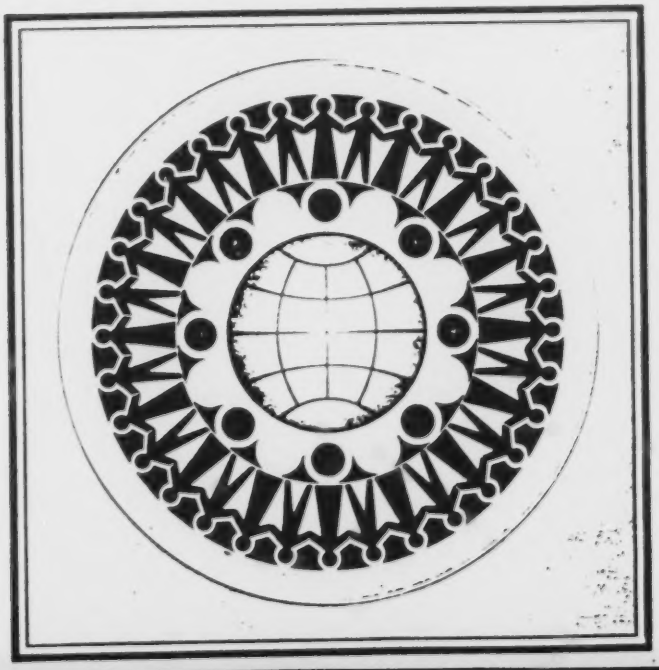
GLOBALIZATION AND LIVING TOGETHER: THE CHALLENGES FOR EDUCATIONAL CONTENT IN ASIA

FINAL REPORT OF THE SUB-REGIONAL COURSE ON CURRICULUM DEVELOPMENT, NEW DELHI, INDIA, 9-17 MARCH 1999, ORGANIZED BY THE INTERNATIONAL BUREAU OF EDUCATION AND THE INDIAN MINISTRY OF HUMAN RESOURCE DEVELOPMENT



UNESCO
INTERNATIONAL BUREAU OF EDUCATION

CENTRAL BOARD OF SECONDARY EDUCATION, INDIA

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Foreword

The development and reform of school curricula is an ongoing preoccupation for educational authorities in all countries. The approach of the new millennium has given new urgency to efforts by governments to provide all citizens with access to quality education, at least for the basic level, while improving and widening access to secondary education. More than ever before, governments are being called upon to equip children and young people through education with the capacity to lead meaningful and productive lives in a world of bewilderingly rapid and complex change. Existing curriculum content and pedagogical methods are increasingly being called into account, as pupils leave schools ill-prepared for the world of work and adulthood, unready and unmotivated to carry on learning throughout their lives. The meaning and role of education, of teaching and learning, are constantly being redefined in an effort to meet the real needs and demands of individuals and society.

The implication of globalization for societies around the world is at the heart of present concerns to improve and upgrade education systems. While globalization is often defined primarily in terms of its economic dimensions, the Report to UNESCO of the International Commission on Education for the Twenty-first Century—the *Delors report*—sees the most important consequence of this complex phenomenon to be its socio-cultural and ethical dimensions as regards the growing interdependence and interrelationships between peoples and cultures the world over: 'the far-reaching changes in the traditional patterns of life require of us a better understanding of other people and the world at large today; they demand mutual understanding, peaceful interchange and indeed harmony'.[1] However, the report stresses that 'learning to live together'—one of the pillars of education—will only occur through the possession of self-knowledge and understanding, and appreciation of one's own origins and culture.

It is now widely recognized that designing a curriculum is mainly a national concern, normally shared between educational protagonists at the central, local and school level. The principle of subsidiarity suggests that curriculum issues should not be addressed at the supranational level. Indeed, experience shows that, until quite recently, international exchanges and co-operation in curriculum development were limited, being restricted to professional associations of curriculum specialists. However, two recent trends have contributed to bringing international attention to bear on curriculum matters:

1. The globalization of economies and societies raises a new challenge, requiring the adaptation of educational content to meet both national demand and international concerns;
2. The diversification of actors, both national and international, involved in the delivery of education (in particular with the growing use of information and communication technologies—ICTs), as illustrated by the significant share of non-formal education, have resulted in the emergence of new concepts and norms for educational content; as indicated by such terms as the 'common core', 'universal values', 'basic life skills', etc. Once again, this means sharing responsibility for educational content, as well as presenting us with new opportunities for international co-operation.

It is against this background and in an effort to respond to the numerous contemporary concerns about the content of education, that the International Bureau of Education (IBE), designated as the UNESCO institute responsible for strengthening the capacity of Member States in curriculum development, is focusing its new programme activity on the adaptation of the content of education to the challenges of the twenty-first century. The IBE's programme is divided into two components: (i) integrating the concern of living together into the content of education; and (ii) adapting the content of education in order to cope with some of the challenges raised by a globalized world.

The IBE programme of co-operation in 'research and studies', 'training and capacity building'; and 'the exchange of information and expertise' is based upon two major assumptions:

(a) Although different Member States of UNESCO have very uneven and heterogeneous experiences in the design and adaptation of their educational content, there is room for beneficial exchanges between countries;
(b) Although there are some common views on how to address the demand that content should be modified, a great deal remains to be done to improve the process of adaptation.

The approach to implementing the programme followed by the IBE is based on the assumption that the pro-

[1] Delors, J., et al. *Learning: the treasure within*. Paris, UNESCO, 1996, p. 22. (Report to UNESCO of the International Commission on Education for the Twenty-first Century.

gramme proposes to include: (a) an international platform of information on educational content; and (b) a number of regional and sub-regional co-operation projects. The preparation of such programmes is carried out through regional workshops.

After a first workshop held in 1998 for the Member States of the Mediterranean Region, a second sub-regional workshop took place in 1999 in New Delhi to cater to the concerns of South and South-East Asia. The purpose of the second workshop was:

(a) To collect information about the status of educational content in the region—a 'fact-finding' exercise;
(b) To encourage the assessment of experiences, both among Asian countries and a selected number of countries from other parts of the world; and
(c) To explore and map out some areas for potential co-operation among the participating Member States.

Two key phrases of the IBE's new programmes were incorporated into the umbrella theme of the course, which was *The adaptation of content to the demands of the globalization and the need for learning to live together*.

This publication is a compilation of the various presentations made during the workshop. Both through the diversity of topics covered and the list of issues raised, it offers a rich and varied picture of the challenges facing Asian countries seeking to adapt educational content to meet the social demand of the coming decade.

The IBE would like to thank all of the contributors, both from the participating countries and from other parts of the world, who have shared their information and experience during the workshop. Indeed, the distinction between 'faculty' and 'participants' proved to be of little relevance in this workshop, where all contributors learned from each other.

On behalf of the International Bureau of Education, I would like to express our deep appreciation to the Government of India—and in particular to the Central Board of Secondary Education—for its generous support of the workshop. India both financially supported and hosted the meeting and contributed significantly to the debates and to enriching the information shared among the participants. Finally, I should mention with thanks the financial and intellectual contribution of the Deutsche Stiftung für internationale Entwicklung, which ensured the success of the workshop.

Jacques Hallak
Assistant Director-General,
Director of the IBE

Introduction

This publication is divided into five parts. In Part One, entitled *The impact of globalization on curriculum development*, the keynote lecture by J. Hallak and M. Poisson outlines the implications for education of the phenomenon of globalization, and stresses the renewed urgency for curricula to promote peaceful coexistence and co-operation among pupils.

The subsequent round-table debate examines the relevance of new trends in the teaching of science, social science and the humanities to the challenge of globalization and the principle of learning together. The presenter for the humanities focuses on the primordial role of language instruction in the curriculum. The science presenter identifies the opening up of schools to society and a growing recognition of the need to develop scientific attitudes and behaviour in students as principal trends in science teaching. The final presenter stresses how the social sciences are an ideal medium for transmitting the values and attitudes necessary for harmonious existence within society and the natural environment.

In the following working group discussions, the science group addresses the following four issues: the adequate coverage within the curriculum of both basic scientific knowledge and ongoing scientific developments; the organization of experimental activities; the use of, and respect for, the environment; and bridging the gap between scientific and traditional knowledge. The humanities and social sciences groups discuss how both subject areas may support general education by defining new opportunities for curriculum design, teaching/learning methods, pupil assessment and implementation strategies.

Part Two, entitled *Some challenges for the adaptation of content raised by the principle of learning to live together*, is comprised of a number of presentations on various key current concerns in curriculum reform. R.H. Dave and J.S. Rajput stress the need for comprehensive reforms to existing approaches to teacher education, with the emphasis to be put on career-long education and training, and the development of a professional ethic among all teachers. J.-M. Sani and M.M. Pant outline the possibilities which information and communication technologies (ICTs) offer for innovating the educational process, underlining the need in this context for a redefinition of the role of the teacher while stressing that this role remains key to ensuring the effective exploitation of ICTs as tools for learning. The need for vocational education to meet the demands of globalization is stressed by Arun K. Mishra, who points out not only the economic, but also the social goals, of this essential area of education. His presentation indicates the possibilities which vocational education offers for promoting values of co-operation and respect for others.

Part Three, *Interdisciplinarity, school-based management and non-school science education: a few topics for reflection by curriculum developers*, includes three case studies from countries outside of the Asian region. Two cases examine major curriculum reforms, one at the national, and the other at the provincial level. E.M. Skaflestad discusses how the new national curriculum in Norway was designed as a connective model establishing clear links between all educational levels and emphasizing an interdisciplinary approach in subject teaching, with core values being taught across the curriculum. Though centrally prescribed, the curriculum provides for local and individual adaptation. Kenneth Ross describes the introduction of the most decentralized system of schooling in the history of public education in Australia, in the state of Victoria. Under this system, in which each school in collaboration with the community draws up its own charter outlining its particular vision and aims, institutions design their own educational programmes based on a core curriculum and standards framework established by the Department of Education. The final country study from France describes the valuable role played by one of the world's major science and technology museums, La Cité des sciences et de l'industrie (La Villette), in making available a wealth of educational resources to the country's schools. This study illustrates the importance of collaboration between non-school institutions providing learning opportunities and schools, stressing the need for schools to emerge from their traditional isolation and to become more involved in society.

In Part Four, *Current trends in the adaptation of educational content in South and South-East Asia*, U. Bude's lecture focuses on the need for curriculum development to be a continuous holistic process aimed at real and meaningful change in the classroom. The importance of flexibility and openness in curriculum policy and design, permitting regional and local adaptation of a core document, based on the needs of diverse socio-cultural groups within a country, is emphasized. The advisability of providing for broad-based participatory approaches to the curriculum development process is stressed, with the fundamental importance of the teacher in successful curriculum design and implementation underlined.

The report concludes with an overview of the country reports on curriculum development presented in Part Five.

PART I:

THE IMPACT OF GLOBALIZATION ON CURRICULUM DEVELOPMENT

Education and globalization: learning to live together

Jacques Hallak and Muriel Poisson

This text will first define the phenomenon of globalization, considered as the most widespread trend on the eve of the twenty-first century, and will present some of its implications for knowledge, employment and poverty. Second, it will identify some of the challenges raised by globalization in the specific sphere of education. Third, it will focus on the principle of teaching/learning to live together. This is considered a key issue in helping young generations to cope with the challenges raised by globalization. This section will also cover, more precisely, the different means of introducing teaching to live together in educational content and the problems that this may entail. Fourthly, it will pay careful attention to the role of teachers in this context. They are undoubtedly the key actors in any reforms that may take place. In particular, we describe how to help them adapt their teaching methods and develop a 'sense of ownership' towards the curriculum, so that change can actually be guaranteed at the school level. This section will conclude with the main topics that were selected for debate during the course.

GLOBALIZATION, A NEW PHENOMENON

The phenomenon of globalization[1] has resulted from the worldwide integration of economic and financial sectors. It has existed historically since the development of international trade. However, it can be considered, to a certain extent, as a more recent phenomenon, since over the past few years it has experienced a high acceleration, due to the following factors:

- *Geopolitical changes*: the erosion of the power of nation states, in a context of transfer of sovereignty from governments to regional entities (ASEAN, CIS, EU, MERCOSUR, SADC, etc.), and the development of multinational corporations have contributed to a dramatic increase in trans-border exchanges.
- *A dominant ideology of regulation by market forces*: the end of the regulation of monetary, financial and economic markets, following, in particular, the setting-up of the Bretton Woods system, the GATT agreements and, finally, the expansion of the free-market ideology after the collapse of the Soviet Bloc, has greatly contributed to the interpenetration of national economies;
- *Fast and significant technological progress*: technical progress in the communications field has permitted users to access and exchange information at any time and from any place in the world, which has largely facilitated the speeding-up of production, as well as the sharing of goods, services, capital flows—and also ideas.
- The aim of *increasing return on capital investment*, added to the possibility of locating the units of production of goods and services almost anywhere in the world, have also contributed to uniting or globalizing our planet.

A few figures can illustrate the importance of the phenomenon of globalization in Asia. Table 1 shows that the volume of exchanges among the Asian countries has mushroomed during the last decade. Thus, in developing Asia and the Pacific, the total value of imports increased threefold from 1986 to 1995 and the total value of exports more than quadrupled during the same period. About half of these exports took place within the Asia region (52 % for 1995), which proves that the phenomenon of regionalization is linked to globalization.

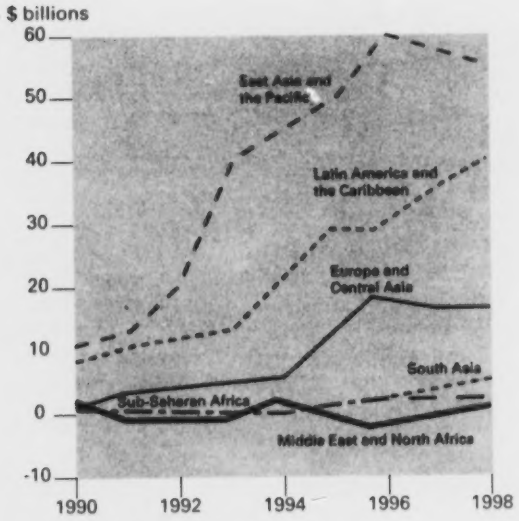
TABLE 1: Developing Asia and Pacific region: external trade–total value (millions of US$)

	1986	1990	1995	1986-95
Imports	230 993	456 132	945 701	+ 309 %
Exports	175 693	416 441	889 524*	+ 406 %

Exports to Asia, 52% ; North America, 21% ; Western Europe, 17%.
Source : United Nations, 1997.

[1]For more information on globalization, one can consult the following booklet: J. Hallak, *Education and globalization*. Paris, UNESCO: International Institute for Educational Planning, 1998. (IIEP contributions, no. 26.)

FIGURE 1. Foreign direct investment in decline in East Asia.



Source: World Bank, 1998

Figure 1 illustrates the fact that the development of the economies of different countries in Asia is linked to foreign investment, and that, consequently, countries of the region are integrated in the global economy and dependent on outside partners. Direct foreign investment has thus increased from US$10 billion to US$60 billion between 1990 and 1996 in East Asia and the Pacific, whereas in other regions, such as Europe and Central Asia, the Middle East and North Africa or Sub-Saharan Africa, it has stayed at the same level, or has only slightly increased.

Among the main implications of the phenomenon of globalization, one can mention:

- the *emergence of learning societies* due to the multiplication of sources of information and communication;
- the *transformation of the nature of work* with, in particular, the need for more flexibility and mobility, the importance of communication skills, the necessity for teamwork, the increasing use of new technologies, etc.,
- the *progression of social exclusion*—a large part of the world's population does not participate in this process.

In this context of a changing world, the central role played by education to favour social and professional integration appears to be hugely reinforced.

SOME OF THE EDUCATIONAL CHALLENGES RAISED BY GLOBALIZATION

The educational challenges raised by globalization are a multitude. We may mention the following as examples:

- *The need to rethink the delivery of content, integrating new sources of information.* The multiplication of sources of information (newspapers, radio, television, the web, CD-ROMs and other multimedia materials, etc.) and the fast evolution of knowledge, in particular, in the fields of science and technology, imply not only the need to update educational content regularly, but also to review the design of curricula and the teaching of subjects in an interdisciplinary manner. This also raises the need for better co-operation with 'information brokers'—such as science museums—that can play the role of intermediaries between 'knowledge producers' (universities) and 'knowledge consumers' (pupils/students).
- *The need to favour the development of skills alongside knowledge.* The fast evolution of today's societies—and, more specifically, of labour markets—requires new skills from individuals. These were summarized in a report published by UNESCO in 1996 as follows: learning to know, learning to do, learning to live together and learning to be (see Box 1). They call for the redefinition of educational programmes on a competency-based approach: this implies that from now on, curricula should focus on students attaining a stated number of clearly defined skills or competencies at the end of each stage and level of school education. This, of course, should have consequences on teaching/learning methods, student assessment procedures and certification.

BOX 1.The four pillars of education, as defined by the Delors Commission.

- **Learning to know,** by combining a sufficiently broad general knowledge with the opportunity to work in depth on a small number of subjects.
- **Learning to do,** in order to acquire not only an occupational skill, but also the competence to deal with many situations and to work in teams.
- **Learning to live together,** by developing an understanding of other people and an appreciation of interdependence in a spirit of respect for the values of pluralism, mutual understanding and peace.
- **Learning to be,** so as better to develop one's personality and be able to act with ever greater autonomy, judgement and learning responsibility (including memory, reasoning, and communication skills).

Source: J. Delors, et al. *Learning: the treasure within,* Paris, UNESCO, 1996. (Report to UNESCO of the International Commission on Education for the Twenty-first Century.)

- *The need to adapt curricula to the needs of different socio-cultural groups, and to maintain the national and social cohesion of the country.* The phenomenon of globalization has helped to widen the gap between those who globalize, and those who are globalized—or left out—of the process at–the local, national, regional and international levels. This raises the problem for public authorities of how to maintain the cohesion of a country. As a result, there are implications for education, since the situation and the socio-cultural background of learners are seldom taken into consideration when conceiving and implementing curricula. Trying to cope with this situation means not only having to refer to the national identity or promote the concept of citizenship, but also having to include the teaching of peaceful co-existence in educational content.

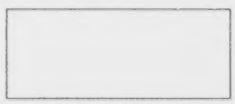
HOW TO INTRODUCE TEACHING ABOUT LIVING TOGETHER INTO EDUCATIONAL CONTENT

If we refer to the definition given by the Delors Report mentioned in Box 1, teaching to live together is synonymous with developing an understanding of other people and an appreciation of interdependence in a spirit of respect for the values of pluralism, mutual understanding and peace'. There are several ways of introducing this concept into educational content. The three main strategies are as follows:

- *By defining new scopes for 'old disciplines' (history and geography, foreign languages, etc.):* a study led by the University of Geneva, under the leadership of the IBE, has shown that traditional subjects, such as history and geography, can contribute, to a great extent, to teaching about living together. It thus categorized three different ways of teaching geography (see the schemes included in Box 2). In the case of the 'closed model', a country is presented as a homogenous space, delimited by its borders. The 'opposing model' takes into account the existence of several overlapping entities (geographical, administrative, economic, linguistic, etc.) in the national territory. Finally, the 'comprehensive model' puts forward the existence of various entities, both inside and outside the national territory, and their mutual interactions. The only model favouring learning to live together is obviously the comprehensive one, which brings together different geographical scales to permit an understanding of the continuity from the local to the global, and which allows not only the concept of identity to develop, but also those of otherness, inter-dependency and universality.

BOX 2. The role played by geography in learning to live together

CLOSED MODEL:



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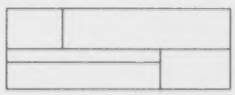
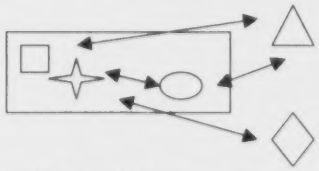


COMPREHENSIVE MODEL:



Source: IBE-University of Geneva research project on 'Learning to live together through the teaching of history and geography'.

- *By introducing new subjects (i.e. education towards active citizenship, environmental issues, etc.) in curricula:* the widespread concern for global issues, such as population control, urbanization, environment, consumption, citizenship, etc., favours their integration in educational programmes. The example of the project entitled 'Educating towards active citizenship', launched by Quebec (Canada) in 1998 (see Box 3), shows that the introduction of these new concepts demands a review of curriculum design by adopting a comprehensive approach, developing more participatory teaching/learning methods and working in partnership with out-of-school actors so as to enable students to put what they have learned into practice.

TABLE 2. Towards charters of values in Australian states

Value	States/years				
	WA 1985	SA 1989	Qld 1991	NSW 1991	Qld 1994
Adaptability	■	■	■	■	■
Authority, respect for legitimate				■	
Compassion	■				
Concern for the welfare of others		■	■	■	■
Co-operation	■	■		■	■
Co-operation, international				■	■
Creativity					■
Critical thinking					■
Diversity, cultural sub-groups, acceptance			■		■
Ecological sustainability					■
Equality		■	■	■	
Ethical standards				■	
Excellence	■			■	
Family, place of, in society				■	
Freedom, individual liberties		■	■	■	
Honesty	■			■	■
Initiative, enterprise					■
Integrity	■				■
Intellectual enquiry					■
Justice, fairness	■	■	■	■	■
Lifelong learning					■
Life, respect for	■				■
Partnership: school/home/community					■
Peaceful resolution of conflict	■	■		■	
Rationality, respect for reasoning	■	■	■	■	
Responsibilities, social	■		■	■	■
Rights, human, respect for	■		■	■	
Self-respect					■
Sensitivity: physical, aesthetic, emotional, spiritual	■				
Stewardship of the earth and its resources					■
Tolerance	■			■	
Truth, respect and search for		■	■		■

Sources: Education Western Australia (WA), 1985; Education South Australia (SA), 1991; Education Queensland (Qld), 1989; Education New South Wales (NSW), 1991; Queensland Curriculum Review, 1994.

BOX 3. Educating towards active citizenship—the experience of Quebec (Canada)

To respond to its linguistic, cultural and ethnic diversity, in 1998 Quebec launched an innovative programme on education towards active citizenship. It was based on a comprehensive approach, involving all school subjects and the different levels of education. It emphasizes the use of participatory pedagogical approaches, aimed at encouraging debate, decision-making, mutual understanding, etc. It also favoured opportunities to put citizenship into practice out of school, thanks to the co-operation of parliament, associations, etc.

Source: Eduquer à la citoyenneté, Quebec. (Rapport annuel du Conseil supérieur de l'éducation, 1997-98.)

- *By promoting social consensus on a common core of values:* The teaching of specific values, such as the acceptance of diversity, fairness, tolerance, etc., can help in learning to live together. Australia has developed an innovative project in this area. A 'charter of values', including a list of values (see Table 2), has thus been set up. Each Australian state has the possibility of selecting values from the list: the state of Queensland, for instance, has agreed to teach in its schools, among other things, the values of compassion, equality, respect for human rights and respect and the search for truth.

Nevertheless, a few warnings can be issued about the introduction of teaching to live together in curricula. They are summarized in Table 3

The development of new teaching/learning methods appears to be fundamental in obtaining a significant change in learners' behaviours. An article published in the *Journal of vocational education and training* gives a good illustration of the importance of the pedagogy used (see Box 4): students from the Hong Kong Polytechnic University were failing to integrate into the food and management sector, although they had been trained to do so. This was partly due to the irrelevancy of the teaching methods used, which did not help them feel sufficiently confident to communicate in English with foreigners, who were to be their main customers.

TABLE 3. Risks and remedies of teaching about living together

Risks	Remedies
The 'Panic approach'	Rigorous planning of the development of curricula
Over-loading of curricula	Focus on the basics Review the balance between subjects. Inter-disciplinarity
Accumulation of a fragmented knowledge	Bridges between general education and the world of work
Limited impact on learners' behaviour	Modern teaching/learning methods

BOX 4. Food and beverage management teaching in Hong Kong

The Hong Kong Polytechnic University offers training in food and management. But as much of the terminology used in this sector is derived from Western cultures, Chinese students had difficulty in communicating. To help students fit better with the needs of their future employers, it was proposed:

- to improve their listening skills in English;
- to develop their confidence in speaking, thanks to a student-centred learning methodology.

In other words, learning how to interact with the Western system.

Source: Journal of vocational education and training, vol. 49, no. 3, 1997.

HOW TO HELP TEACHERS ADAPT THEIR TEACHING METHODS

Teachers are the key actors if any actual reform of educational programmes is to take place. Several policies can be followed in order to help them adapt their teaching methods, three of which are presented hereafter:

- *To help them develop new skills through initial and in-service training (involvement in teamwork, etc.).*

The most obvious strategy consists of renewing their initial training through in-service courses designed to integrate new subjects that will be taught in an interdisciplinary way, at the same time familiarizing them with participatory and student-centred approaches. Regular in-service training should help teachers to update their knowledge and share their experience with others.

BOX 5. A few recommendations to review the design and use of textbooks

Prepare textbooks for each educational level with a view to ensuring the coherence of the teaching of a discipline over several years.
Encourage school principals and teachers to define an educational project, so that the selection of books should be made according to a global—and not a disciplinary—approach.
Make the textbook, defined as a reference tool, separate from other sources of information (documents, images, multimedia), so that teachers may create their own pedagogy.

Source: Inspection générale de l'éducation nationale, *Le manuel scolaire*, Paris, Ministère de l'éducation nationale, 1998.

BOX 6. General Educational Development Testing in the United States

GED Testing is designed to measure the academic outcomes traditionally acquired by the end of a typical high school study programme. The GED 2000 series tests should take into account:
information processing, including knowing how to determine what information is needed, how to conduct a search for that information, how to synthesize information from diverse materials and in different media, and how to organize and present that information,
communication skills, including knowing how to develop a message for a variety of audiences and purposes.
A **cross-disciplinary test** will allow examinees to use information processing skills from a variety of academic disciplines to interpret the material.

Source: Connections, Philadelphia, PA, NCAL, University of Pennsylvania, 1998.

- *To modify the design of textbooks to allow them to be used differently.* In order to modify their teaching methods, teachers should be given the opportunity to use newly-designed educational materials. A report published by the French Ministry of National Education contains recommendations to review the design and use of textbooks (see Box 5). It suggests, in particular, that textbooks should be defined as 'a reference tool', summarizing the main concepts which children should acquire. They should not to be too long, nor contain too many pictures, quotations, etc. This would enable teachers to organize their course autonomously, referring to textbooks, but using other materials as well—in particular, multi-media sources—to illustrate their presentation as they want.
- *To make new evaluation means available to teachers, defined together with different actors.* In order to be ready to adopt 'competency-based' curricula, teachers should be provided with new evaluation tools. The example of the United States' General Educational Development Testing (called GED Testing) can give a few ideas on this point (see Box 6). In its 2000 version, it includes a series of tests aimed at evaluating the capacity of students on information processing and at assessing their communication skills. A cross-disciplinary test also makes it possible to see if students are able to solve a global problem, by making use of what they have learned in different subjects.
- *By giving them the possibility of resorting to non-formal educational resources (science museums, etc.):* The creation of innovative science museums—such as the Exploratorium in San Francisco, USA, or La Cité des Sciences de la Villette, in Paris, France—should be regarded as key partners for teachers to access the most recent knowledge and to experience other ways of teaching (development of projects, group work, etc.).

But above all, favouring a 'sense of ownership' towards the curriculum on the part of teachers should be looked at as a key factor for change. Two main strategies can be explored in this area:

BOX 7. Curriculum conferences in Sub-Saharan Africa

Curriculum conferences offer opportunities for active participation for all those involved in reforming primary education (practising teachers, subject specialists, teacher trainers, etc.). The main emphasis of such conferences is the transformation of nationally prescribed curriculum guidelines into practical lesson units that reflect local conditions and concentrate on prevailing cultural trends. By favouring 'a sense of ownership' of the reform among those involved in transforming curricula into action at school level, curriculum conferences facilitate the implementation of the recommended core curriculum.

BOX 8. School-based curriculum development in Scotland

In Scotland, schools are free to develop their own curriculum, within the limits of a broad, nationally prescribed framework. From the national curriculum framework, each school selects, adapts and develops courses and modules. The central educational authorities assist schools by making guidelines, course materials, nationally approved full courses, short courses and modules available to them. It permits the development of curricula that are more relevant to local and school needs.

Source: A. Lewy, *National and school-based development*, Paris, IIEP, 1991.

- *To involve teachers in the development of curricula:* Innovative experiments have been conducted in Sub-Saharan Africa in order to enable teachers to take part actively in the setting-up of educational programmes (see Box 7). Curriculum conferences have thus been organized to allow teachers to decide how prescribed curriculum guidelines should be put into practice. These conferences have proved to be successful, helping teachers to feel involved and, as a result, responsible for what they teach.
- *To favour school-based curricula:* an example from Scotland illustrates another way of associating teachers with the development of educational programmes (see Box 8). For a while, Scottish teachers have been authorized to select, adapt and develop, at school level, the limited guidelines provided to them by the government. They have had, for instance, no textbooks available to help them. This experience was said not only to favour a sense of ownership of curricula among teachers, but also to help improve the relevance of what was taught, by adapting it both to local and school needs.

To conclude, from all the topics presented above, a selected number were chosen to be discussed during the sub-regional course on curriculum development, namely:

- The relevance of new trends in the teaching of science, social science and humanities to the challenges of globalization and the principle of living together.
- Decentralization of curriculum development to local or school level.
- Integrated and interdisciplinary approaches in curriculum reform.
- The adaptation of teacher training to curriculum change.
- The potentials and challenges of information and communication technologies in the adaptation of curricula.
- Non-school science resources and collaboration between formal and non-formal educational institutions.
- The need for vocationalizing curricula.

Round-table: The relevance of new trends in the teaching of science, social science and humanities to the challenge of globalization and the principle of learning to live together

Four resource persons participated in the round-table debate, which was then followed by group discussions on issues relating to the three broad subject areas examined: humanities, science and social science. The full text of the presentation on the humanities (language and the school curriculum by C.J. Daswani) is included below, followed by summaries of the other presentations.

THE HUMANITIES: LANGUAGE AND THE SCHOOL CURRICULUM

C.J. Daswani

The human child is born to learn. The learning process begins at birth and continues throughout life. The human capacity to learn is best demonstrated by the child's ability to learn a first language. Bombarded with ungrammatical, incomplete and mutilated baby talk, nevertheless the child learns to speak his/her mother-tongue perfectly by the age of 4 or 5. In this way, the child is able to control his or her total environment—social, emotional, and psychological—through language. A child is even able to learn more than one language—two, sometimes more—if the social environment so requires.

Very few of us realize or appreciate that 'normal' children perform a miracle in mastering their mother-tongue so quickly, and can learn more than one language if they are exposed to more languages. We can appreciate this miracle when we see the problems that adults have in trying to learn a 'new' language.

By age 4 or so, every child has learned to speak the mother-tongue or home language perfectly; understands what others say, and makes himself/herself understood. By this age, the child is able to use the language creatively and may be likened to a 'born' poet. The only difference between the child and the adult is in the range of vocabulary that a child controls. And, of course, the child has yet to learn to read and write.

The child and the school

When children enter school they are already accomplished users of the mother-tongue or the home language. But the school often ignores this linguistic competence of the child, since a uniform standard form of language is 'taught' to all children. Often this standard language is so different from the child's home language that the child has problems comprehending it—as well as the school itself.

It is bad enough when the child's home language is simply a social or regional dialect of the standard school language. The problem is compounded when the school language is totally different from the home language of the child.

In many bi- or multi-lingual countries, children have to start school using a language that is entirely different from their mother tongue. When this happens the child not only feels lost, but is traumatized. In such a situation, linguistically the child becomes an infant again, while still actually being an accomplished user of the mother-tongue.

The situation is even more complex, because the schoolteacher believes that the child has to be taught basic language skills—listening and speaking, followed by reading and writing—in a language that the child does not actually understand in the first place. Very soon, the teacher becomes convinced that the child will not be able to learn the school language efficiently and writes him/her off as a poor learner. In the absence of basic vocabulary, grammatical intuition and communication skills, the child will not able to take on the other school subjects either.

In some school systems this complex problem is bypassed by a simple strategy whereby the teacher trains the child to memorize facts and standard responses which can be reproduced during examinations. And this is passed off as formal learning. The child learns to don two personalities: one of limited competence in the school, and another of fluent communication at home.

Unfortunately, in such bi- or multi-lingual settings the school language, which can be regional, pan-national or international, often enjoys social prestige and leads to economic advantage. Consequently, the child gradually learns to favour the prestigious 'other' tongue in preference to the mother-tongue. As a result, by the time they complete their formal education children end up as linguistic cripples, having poor competence in the other language, and having allowed their mother tongue to atrophy through disuse.

Place of language in school

The place and function of language in school ought to be very different from this situation, especially in bi- and multi-lingual school systems. Language education in school must primarily aim at sharpening the linguistic skills that children bring with them. Primary education

should essentially be focused on language education, because at this stage children need to build on the linguistic abilities that they have already acquired.

If the child is functioning in a monolingual setting, he/she has to transit gradually from the oral mode of communication to the written mode, which can take four or five years of formal primary school. During this period, children should not only acquire basic literacy skills, but should be allowed to build on their intuition in the mother-tongue. Children should be made aware of the immense power of language and the potential that they already possess to use that language creatively. Children have to build on their lexical resources, experiment with descriptive devices, and learn to reflect on their environment—physical, social, psychological and emotional.

On the other hand, if the child has to acquire a new language in school, the school should build on the child's existing skills in the mother-tongue when learning the new language. Although languages appear to be different from each other, there are crucial underlying similarities in the manner in which human languages are organized. The structures of the mother-tongue can be exploited to teach a second and even a third language. All young children have a natural ability to learn other languages quickly, provided they perceive them as essential for day-to-day communication.

What young children do not understand is why they should learn a new language, which is obviously not needed for communication. If left to themselves, children would learn a new language only if it hastened their integration into a milieu. The motivation to learn a language for instrumental purposes comes at a later stage. However, the school curriculum can be designed so that young children can become motivated to learn a second language that will be useful to them later in life.

The language curriculum

In order to plan and implement a creative language curriculum, it is necessary to understand how children learn languages. It is necessary to map the communicative strategies that children naturally employ and to build on these so that they internalize their expanding experiences in school.

The first step in the language curriculum should be to enlarge the child's vocabulary in the mother-tongue and link it to the language used in school. If the school language is different from the mother-tongue, the curriculum should allow the child to use the mother-tongue vocabulary as a basis for learning the lexicon of the language used in school. The enriching of the child's vocabulary can be achieved in various creative ways.

The second step is to ensure that children perceive the linguistic/cultural categories that their mother tongue employs for looking at the real world. This is significant, especially in bilingual and multilingual settings. Different cultures categorize reality in different ways. Colour terms, relational terms and spatio-temporal relationships are perceived differently by different cultures, and these differences are reflected in the languages. For children to acquire intuition in a second or third language, it is crucial that they should apprehend the linguistic/cultural categories of a language.

The third step is to equip children with adequate descriptive devices so that they can describe their experiences and their environment. In the current school curricula, children are seldom encouraged to give expression to their thoughts, perceptions, feelings or emotions. Instead, they are given samples of excellent writing by well-known authors that they are required to emulate. This results in a reluctance on the part of the children to experiment with language. In bilingual and multilingual settings, children can be guided to discover how different languages employ descriptive devices. It is possible for a child to enrich his/her linguistic repertoire by personally comparing two or more languages.

The fourth step is to enable the child to reflect on his/her reality in the mother-tongue and the other tongue(s). Children learn to ask 'why?' at a very early age. Unfortunately, the school often drills out this natural inquisitiveness in the child. This happens when children are expected to conform to the standard norm, and are not allowed to be different from each other.

Language education is inadequate if children do not learn to reflect and work out, on their own, equations such as 'X ... therefore Y', 'if not X ... then what?', and many more. Reflection is the ultimate goal of language education.

A language curriculum that enables and supports the child's natural capacity to learn can be designed, provided the school system sees the child as the focus of education. Education is clearly unsatisfactory if it consists merely of learning information and superficial facts.

The language teacher

No curriculum will suffice unless the teacher is sensitive and innovative. A language teacher has a major role to play in enabling the child to become an excellent communicator. In fact, all teachers are language teachers, no matter what subject(s) they may teach. Each discipline uses the resources of language to impart knowledge. Therefore it is incumbent on every teacher to become aware of the vast potential of a language.

Language teachers need to be trained to transact the language curriculum creatively. They must understand that the four fundamental skills of listening, speaking, reading and writing are merely teaching devices, and not ends in themselves. The goal of language education is to enlarge the natural resources of the mother-tongue that the child brings to school.

The teacher's job is to ensure that children are provided with sufficient opportunities to practice and sharpen their natural skills. One way of ensuring that this happens is to encourage children to read on their own. Reading stimulates the imagination. Reading enables each child to create magnificent images in the mind, an ability that can be severely impaired by the more modern practice of watching television images created by some other person.

In order to ensure all this, the teacher must also be a learner and observe what the child is capable of doing. The teacher must continuously enlarge his/her capacity to enthuse children to use their natural language skills in order to understand the world.

Language globalization

In the present information age, the vast reservoir of human knowledge is available in a dominant international language. It is not surprising, therefore, that many school systems find it both necessary and profitable to teach an international language. Currently, the most profitable global language is English.

However, it is important to be alive to the dangers of adopting an international language at the cost of indigenous languages. While English may assist in the process of globalization, neglect of local and national languages may result in their marginalization. And, of course, the impact of such neglect on human cultures the world over cannot even be imagined or calculated.

SCIENCE

Two principal new trends in the teaching of science are the opening up of schools to society and an increasing recognition of the importance of developing scientific methodology and ways of thinking among students.

The opening up of schools to society

For the past twenty years the school has grown to recognize the need to keep up with changes taking place in society. This trend can be observed through the evolution of the subjects in the curriculum, the participation of different actors from the wider community in the classroom, and the increasing use in the classroom of technical tools used in the world of work, in particular information and communication technologies. Seven characteristics of this new trend may be identified:

- **The end of isolation between school and the rest of the society**. If the school is to prepare a larger number of pupils for adult life more effectively, the education system must be less isolated from the rest of the society. This end of isolation is characterized not only by the evolution of the teaching tools available in school, but by all the following points.
- **The increasing incorporation of global and interdisciplinary topics into the curriculum**. To understand the effects of science and technology on society, it is necessary to teach these subjects in an interdisciplinary manner, relating specific themes to the broader subject and showing their relevance to other disciplines in the curriculum.
- **Vocational education and lifelong learning**. One of the new demands on the school is adequate preparation of pupils for the world of work. The right balance has to be found between general education and the vocational preparation for working life. There needs to be better knowledge of the job market, its structure and organization, and the training required to enter it.
- **Citizenship education.** Another new role for schools is to prepare children to assume their responsibilities as citizens. This should involve not only learning about the organization of society and the role of its institutions, but should also provide models of democratic behaviour, foster rigorous moral attitudes and generate debates on subjects of general interest. All of these concerns are relevant to the effective teaching of science and technology.
- **The new function of non-school organizations.** To help schools assume their new role, diverse non-school organizations can be solicited: the media, museums, libraries, trade unions, businesses and industries can all help schools in this new mission.
- **Basic knowledge versus 'up-to-date' contents**. The vast amount of available knowledge creates the problem of what to include in the science and technology curriculum and what to leave out. Fundamental knowledge is essential, but it is also necessary to be familiar with the latest developments in science in order to understand the society we live in. These developments often differ from basic knowledge in that they are evolving and our understanding of them is constantly being modified. Therefore we need an increasing quantity of knowledge. One of the solutions (but not the only one) would be to determine what basic knowledge is required, as well as the principal new developments to be taught in the classroom. In addition, students must be taught the skills of research, inquiry and interpretation so that they may continue learning and expanding their knowledge beyond the classroom and beyond the school.

The increasing importance of scientific methodology and ways of thinking

The second main trend for teaching science is the importance of training in scientific attitudes and the ability to relate these to the real world around us. Today, it is vital to acquire a general and scientific education at school, but also crucial to have the skills and rigorous attitudes required for research and lifelong learning. Seven aspects of this scientific behaviour can be identified:

- **Skills of observation, analysis, comparison and classification.** These intellectual skills are as important as acquiring and owning knowledge. Developing them demands rigour and objectivity.
- **Carrying out experiments to understand and respect reality.** Experimental activity is one of the most important approaches in science. Starting from a question, students have to be taught to state a hypothesis, to establish the experimental protocol to confirm or invalidate the hypothesis and, armed with the outcome, to progress from this new temporary understanding of reality to another question.
- **Documentary research**. Developing information research skills is essential to learning science. Students must be taught universal research methods, including the selection of appropriate keywords and the identification of suitable sources and resources. This method can draw on books, documents and newspapers, but also on the huge quantity of information available on the Internet.
- **Developing critical thinking skills.** One important attitude to be developed in conjunction with documentary research is the training of a critical mind. Pupils must be taught to check and assess all the information they encounter, compare it with other sources, and weigh up the probability of truth in each. This behaviour is not only useful in documen-

tary research, but also during any activity in which information is being transmitted: debates, meetings, radio, television, etc.

- **Active learning and collaborative learning.** For all the types of activities described above, the pupils have to be active learners and participants in the process. The advantage in working in small groups is that it makes possible the sharing of intellectual resources and supports each other's learning.
- **Developing a pedagogy of the project.** The global dimension of a project, with the involvement of all pupils throughout its development is a vital means of giving pupils a sense of ownership, of meaningful participation in the learning process.
- **Starting from the pupils' representations/initial knowledge as the starting point for differentiated learning.** It is essential to take into account the differences among pupils' initial representations of science and technology and the diversity of their learning styles. It is very important to adapt the learning process to the initial conceptions of individual pupils and assess the evolution of their representations at the end of the lesson. This presentation clearly underlines the urgent need to change traditional approaches to teaching, and to pay attention to the selection and use of instructional materials, and to the organization of the class. For these changes to be carried out in schools, innovation and reform in teacher education are vital.

SOCIAL SCIENCES AND RELIGIOUS/MORAL EDUCATION

Focusing on the recent curriculum reform in Norway, the speaker discussed how subject syllabi in the social sciences, humanities and religious/moral education can support general education especially in the light of the principle of learning to live together.

General concerns

A major concern of curriculum development should be how the various subject areas can support general education for lifelong learning. The curriculum should ideally be seen as a document not just for schools and teachers, but for, and belonging to, society. The ultimate aim of curriculum development should be the achievement of education for all in a unified system, which at the same time acknowledges and caters to difference and diversity.

A major preoccupation is how to develop a balanced curriculum while avoiding overload. How does one decide what to exclude? One way of coping with the excessive amount of knowledge is to develop and foster a spirit of inquiry in the student which will permit him/her to go on learning throughout life. The best approach is to first assist pupils to discover the reality around them and then to expand their inquiry to the wider, global environment. The development of research skills should be an integral part of the core curriculum.

The curriculum should focus on the all-round development of the individual. Students should be taught to see themselves as both citizens of their own country and of the world.

Social studies in compulsory school

It is a prerequisite for a truly democratic society that its members are familiar with, and support, certain democratic values. Each new generation needs to learn the value of participation, and to uphold the democratic rules that govern various sectors of the society. Social studies are intended to prepare pupils for different tasks in society by equipping them with knowledge, confidence in their own values, and the desire to undertake tasks for the common good. These aims must be achieved in close co-operation with the wider society outside school.

The social studies disciplines show how people, through their interaction with nature and with each other, have developed different kinds of social life and forms of society. Developing considered attitudes to society past and present is an important aim of social studies.

The methods used in social studies must provide the pupils with an opportunity to gain insight into the subject matter, relevant skills and the ability to co-operate with others, as well as preparing them for action. Their work must stimulate their curiosity and ability to ask questions. Pupils must be given scope to learn to conduct arguments, to exercise critical analysis, to work independently, and to experience how to organize work in co-operation with others.

Throughout schooling, social studies are based on close contacts and co-operation between schools and their local communities. Active participation in school affairs through pupil council and other co-operative bodies makes school work in a wider sense of the term an important feature of training in social studies.

The structure of the subject

In the social studies syllabus, objectives and areas of study are arranged and presented under the disciplines history, geography and society.

'History' covers the chronological dimension, discusses different views of people and different forms of society through the years, and considers the driving forces behind social development.

'Geography' deals with space and changes in space, and the localization and distribution on the Earth's surface of natural and man-made phenomena and processes. Geography discusses and explains society as it appears at the intersection between people and nature, and surveys the world's living conditions, ways of life and standards of living.

'Society' deals with politics and socialization and shows why society needs laws and rules, organization and government in order to function. Society studies human interplay and conflict, and discusses the rights and obligations, the influences and challenges that individuals encounter as participants in various communities.

At the primary stage, social studies to a large extent form integrated parts of broad inter-disciplinary areas. Later on, these three disciplines emerge more clearly as separate units, but social studies should aim throughout to combine history, geography and society into an overall picture.

Religious and moral education

In Norway, the study of this subject is intended to give the pupils a thorough insight into the State religion and what the Christian view of life implies, as well as familiarity with other world religions and philosophies. The subject is to be approached openly and contribute to insight, respect and dialogue across the boundaries between faiths and philosophies, and promote understanding and tolerance in religious and moral questions. The subject mediates knowledge of a faith—the classroom is not intended to be a place for the preaching of any particular faith. It must respect each pupil's identity in terms of his or her faith, while at the same time furthering dialogue within a shared culture.

In order to meet other faiths and views of life with understanding, one needs to be able to place them in a context that is already familiar. The subject thus has various functions in basic schooling: to transmit a tradition, to maintain a sense of identity, and to build bridges which advance insight and dialogue.

It is natural to have links between the religious and aesthetic heritage, for instance by giving emphasis to graphic arts, architecture, music, drama and literary texts. At the lower secondary stage, the pupils are better able to adopt a critical approach to both the teaching material and divergant opinions, and understand both metaphors and symbols. Discussions, lectures, and excursions all offer relevant approaches to the subject. More weight is given at this stage to comparing various features of religions and philosophies.

In view of its aesthetic dimension, this subject invites co-operation with art and crafts, music and drama, adding variety and raising pupils' levels of activity. What pupils learn about religion and philosophy also brings them into contact with social circumstances and literature, so that an interdisciplinary approach with social studies and mother-tongue instruction is relevant. The human view of nature, and developments in cosmology, research and science, have also depended on religious outlook; co-operation can also be envisaged with natural sciences and technology.

Summary of the round-table working-group discussions

GROUP ONE: SCIENCE

This group addressed four issues related to the improvement of science education:

1. How to cover both basic scientific knowledge and on-going scientific developments in the curriculum in an adequate manner.
2. The role of experimental activities and how they should be arranged.
3. How to teach about the concepts of exploiting and respecting the environment as necessary complements of each other.
4. How to bridge the gap between scientific knowledge and aspects of traditional knowledge, attitudes and beliefs.

Question One: Scientific knowledge and on-going scientific developments

First, it was necessary to define 'basic scientific knowledge' or what was meant by a core curriculum. It was immediately recognized that decisions about the core curriculum are not neutral and objective but raise fundamental value-laden issues. One suggestion was for this kind of knowledge to consist of matters that had continued relevance over time and would likely remain relevant for the future. Another suggestion was that 'core' should be defined as 'processes' and 'competencies' rather than as 'content'.

The basic science curriculum should be realistic and pragmatic in its aims. Rather than seeking to prepare all students for a career as scientists, it should focus on teaching students the fundamentals of science in order to be able to interpret their environment and effectively function within society. Students leaving school should be able to make informed decisions about issues related to science which affect their daily lives, whether or not they go on to study science at a higher level.

Core contents are essential if students are to learn to apply scientific processes. At the same time, they are fundamental to the understanding of new ideas and developments in science. Core elements of the curriculum and current developments in science should therefore not be considered as separate issues but should be seen as complementary, in the sense that the core can be taught within a contemporary framework. The curriculum should seek to teach basic knowledge with reference to its relevance in contemporary society.

The key concerns that should inform decisions about the broader curriculum include an awareness of the cross-curricular nature of many everyday science issues and the universal implications of science.

An essential component of the regular inclusion of on-going scientific developments into the curriculum is the in-service training of teachers. Countries described the problems of inadequately trained teachers and of limited facilities for science teaching. It was agreed that teachers need to be trained in the management of information if they are to stay abreast of developments in science.

It was suggested that one way of teaching about new developments in science is through project work in which students work on both individual and group projects. The provision of extra-curricular activities, such as science clubs, also provides opportunities for discussion and debate on current issues.

Question Two: the organization of experimental activities

Related to this first issue was a fundamental question: are schools providing adequate opportunities for learning science? Experimentation should be considered as not simply the 'hands-on' approach to learning science but should be taught as a whole process. From this perspective, the availability of expensive state-of-the-art equipment is not the priority. It is rather a matter of providing adequate opportunities for experimentation. Experimental activities must be adapted to the available resources and may take place in a number of settings, not simply in the traditional laboratory environment; for example they can take place through play and outdoor activities.

The overall objectives of any experimental activities should be: (a) to help students understand concepts; and (b) to teach them to check theories through the results they obtain themselves. It is essential for the teacher to define the specific objectives of the experimental activity when designing it and for these to be made clear to the student.

The role of the imagination in the development of scientific thought was discussed. From this perspective science should not be taught simply as a precise, rational subject, but should provide room for hypothesis and creativity through experimentation. The need for science instruction to be made enjoyable is vital to improved learning. Experimental activities, if properly designed,

can aid students' enjoyment of science, while leading to meaningful learning. From this perspective, pedagogy needs to be more child-centred.

Three types of 'doing' activity were identified, namely: (a) simple manipulation or the 'hands-on' technique; (b) investigation and enquiry through research projects; and (c) experimental activities providing elaborate processes of confronting students with reality. All of these may be combined in the experimental process. Experimentation clearly calls for varied teaching methods, once again pointing to the need for the adequate training of science teachers. Teachers should ideally be both specialists in their subject and trained in up-to-date pedagogical methods. The lack of a suitably trained teaching force is one of the major obstacles to the improvement of education quality in developing countries.

Question Three: Use of, and respect for, the environment

The concepts of use of, and respect for, the environment should be taught as complementary to each other and should be integrated into the whole curriculum, becoming part of the 'school ideology'. Environmental education is integral to the issues of globalization and of learning to live together.

Environmental education should focus on relevant issues found in the locality, relating them in turn to the global context and showing the interconnectedness of the natural world and of human activity. In defining the environmental education curriculum, a distinction should be made between the science of ecology (nature study) and the much broader spectrum of environmental issues and concerns which enter all aspects of daily life and should be integrated across the curriculum. Environmental education should thus be taught as a systemic discipline. Some participants indicated that this approach is already used in their countries. Integrating the environmental education curriculum also assists in reducing curriculum load.

The evaluation of the effect of environmental education on individual attitudes and behaviour is difficult to measure. It is easier to evaluate the students' grasp of the concepts taught, but measuring application of this learning on daily behaviour would require another type of evaluation over a long-term period. It was suggested that teaching aspects of environmental law within the local context would assist in developing environmental awareness and changing behaviour.

It is very important for students to be aware of the difference between scientific knowledge and social opinion and choice. The evolution of science does not occur in a vacuum but is influenced by a range of political and social issues. Science needs to be taught with the aim of helping students to become informed decision-makers with respect to these complex issues and their impact on people's lives. They need to be aware of the many different actors involved in these issues and the roles they play. Scientific knowledge is essential for true social participation and thus should be considered as part of education for democratic citizenship.

Question Four: scientific/traditional knowledge

While it should be recognized that not all traditional knowledge is opposed to scientific knowledge, this question was considered to be a sensitive and difficult area in the curriculum, because of the potential conflict between scientific belief and socio-cultural (particularly religious) values.

While the universal application and relevance of scientific findings should be stressed, students should be made aware that science itself is not exact but is constantly changing and being revised—uncertainty and hypothesis being integral parts of scientific thought. It should be recognized that scientific thought and traditional knowledge and beliefs involve differing ways of looking at the world. Teachers should be trained to acknowledge both viewpoints and to exercise objectivity with respect to both in the classroom.

It is valuable to deal with these conflicting points of view with respect to traditions, some of which may in fact be harmful to individual or collective survival in areas such as health and the environment. An example was given in a project called 'science across the world' project where opportunities were provided for both scientific and traditional beliefs and knowledge to be explored in an objective manner. When teaching these issues, the level of maturity of the students must be taken into account.

The media can play an important role in changing traditional beliefs that may stand in the way of development. However, if the curriculum is to foster democratic attitudes, care should be taken for ideas and beliefs to be discussed and not to be imposed.

One effect of globalization on science is that scientific knowledge is penetrating traditional societies much more rapidly. Care should be taken to examine both the beneficial and the harmful effects of science.

GROUPS TWO AND THREE— SOCIAL SCIENCES AND HUMANITIES

Social studies—from core values to classroom practice

Based on national experiences, the group discussed how social sciences (history, geography, society) can support general education (values education, socio-civics, citizenship education) by defining new opportunities for curriculum design, teaching/learning methods, pupil assessment and implementation strategies.

It was recognized that the aims and content of general education need to be clearly defined. General education was seen not simply as the set of compulsory subjects to be studied by all students, but also as the core values to be taught through the curriculum. The issue of curriculum overload was a common concern.

The group made the following recommendations with regard to *the curriculum*:

- The existing curriculum should undergo review in order to define minimum learning competencies (MLCs) for general secondary education.
- Social studies are an ideal area for teaching about learning to live together and should inculcate a concept of global citizenship.

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- The teaching of the social sciences, particularly at primary level, should follow an integrated approach. A key example of where an integrated approach may be adopted is in the broad issue of the interdependence among countries, and the need for respect towards other cultures. This should be taught across subjects, with the key thematic areas already identified during curriculum design.
- Teaching of the social sciences should progress from the immediate to the more distant environment.
- Human rights education should be a component of the social sciences curriculum.
- Citizenship/civic education should include the teaching of values.
- Religious education should perhaps be taught separately from social science subjects, although values found within religion can also be integrated across the curriculum.

The group made the following recommendations with regard to *teaching/learning methods:*

- There is a need for new methodologies, with the focus being on child/student-centred learning. Strategies should include activity-based learning, co-operative learning and individualized learning. Role-play and simulation should also be used. Process skills and higher-order thinking skills should be taught.
- In implementing the strategies, the teacher's role must become a more flexible one ranging from a lecturer to a motivator, guide and facilitator.

The group recommended that *pupil assessment* should aim to move towards a formative mode of assessment through *continuous assessment* using:

- regular feedback;
- possibilities for self-evaluation;
- portfolios;
- formal marking of work;
- project reports.

In the same way, *summative assessment* should use:

- paper and pencil tests;
- formal marking.

The group made the following recommendations with regard to *implementation strategies:*

- new/supplementary learning materials should be prepared, including parents' books (guides to the curriculum), teacher's guides, textbooks and pupils' manuals;
- teacher orientation/training on new teaching methods should be provided, both in terms of pre-service and in-service teacher education (INSET);
- alternative assessment processes should be introduced;
- monitoring/follow-up in schools should be guaranteed.

A phase should be foreseen during which a widely applied trial scheme would be implemented, allowing for adequate review and revision. Heads of schools should be given curriculum frameworks so that they would be in a position to monitor implementation. The process should take place over a period of five to ten years.

Humanities—from core values to classroom practice

The group was given the objective of discussing how the teaching of languages can be adapted to the needs of different socio-cultural groups for developing communicative competence and participation. This includes the following questions: what are the implications for curriculum design, teaching/learning methods, pupil assessment and implementation strategies?

In the field of curriculum design, the principal concerns were:

- The complex situation in multilingual societies leading to a diversity of socio-cultural groups in the classroom;
- The need to develop adequate communication skills among the students.

The group made the following recommendations with regard to *the humanities:*

- when designing curricula, the local environment (natural, social, and cultural) should be borne in mind;
- within the perspective of language as a tool for learning, the mother-tongue should be the medium of instruction at the primary level;
- set priorities with regard to the choice of languages to be taught;
- develop a language curriculum that will seek to promote communicative competence among all learners;
- develop, select and use stimulating instructional materials.

The group made the following recommendations with regard to *methods of teaching and learning:*

- modify teaching/learning methodologies;
- strengthen mother-tongue competence.

Teacher competence—from core values to teaching practice

The group was given the objective of discussing the challenge of developing teacher competence in relation to general education. It was decided that there was a need for teachers to use different methodologies and it was expected that teachers should be competent communicators. The group made the following recommendations:

- teachers should be properly prepared to implement a revised language education curriculum;
- the curriculum of pre-service teacher education programmes should be reformed/adapted to accommodate the concerns of general education;
- there should be adequate development of in-service teacher education programmes to equip teachers to handle the concerns of general education more effectively.

PART II:

SOME CHALLENGES FOR THE ADAPTATION OF CONTENT RAISED BY THE PRINCIPLE OF LEARNING TO LIVE TOGETHER

Adaptation of content to address the principle of learning to live together: the challenge for teacher training[1]

R.H. Dave and J.S. Rajput

EFFECTIVE TEACHER EDUCATION: A CORE CONDITION FOR THE QUALITY OF SCHOOL EDUCATION

Education is a process of human enlightenment and empowerment for the achievement of a better and a higher quality of life. A sound and effective system of education results in the continuous development of learners' potentialities, the strengthening of their skills and the fostering of positive interests, attitudes and values.

All progressive societies have recognized the enormous potential of education and have committed themselves to the universalization of elementary education with the explicit aim of providing 'quality education for all'. They have also recognized the need to expand secondary education to as near universal levels as possible, while simultaneously improving its quality for the increased empowerment and advancement of an ever-increasing percentage of the population. While higher education also has great potential in this respect, it is often accessible to only a small section of society. However, at present, primary education can be provided to practically all members of society and, therefore, its quality and efficiency attain a special significance within the personal, social and national context.

Thus, effective teacher education acquires an even more crucial importance, becoming a key factor in ensuring quality school education. In other words, effective formal education implies effective teacher education.

Teachers can act as trail-blazers in the lives of learners and in the process of education for development. If they acquire the professional competence and attitudes that enable them to effectively perform their multiple tasks in the classroom, in the school and in the community, teachers become the single most important contributing factor in ensuring quality educational provision at primary and secondary levels.

There was a time, in most countries, when teacher education was just a single event that took place at the beginning of a career. But this once-in-a-lifetime model is utterly inadequate for the needs of contemporary societies. In the last decades of the twentieth century, society has witnessed unprecedented technological advancements and economic, political and socio-cultural changes that must be reflected in the school. Indeed, these events have already had a very significant impact on schools around the world. In an effort to better meet the diverse needs of learners and ultimately of society, there have been numerous curricular reforms and the introduction of a range of new approaches and strategies in instruction and evaluation.

A COMPREHENSIVE PARADIGM

Clearly, all of these changes have profound implications for the content and processes of teacher education. If teachers are to be able to provide quality education in the face of these challenges, there is an urgent need for on-going reform of teacher education. Effective teacher education for both elementary and secondary stages of schooling has now to be conceived within a more comprehensive paradigm encompassing a number of interrelated components. These components include the following:

- *Pre-service and initial teacher education*: To be provided in a systematic, professional way to all new teachers entering the teaching profession.
- *Recurrent in-service teacher orientation*: To be offered on a recurrent basis and in an organized manner to practising teachers through orientation seminars, workshops, tele-conferences and other such programmes in response to new professional needs and to ensure continued teacher motivation.
- *Continuing professional self-learning*: According to their individual needs, interests and specific professional responsibilities, teachers should pursue their own self-directed and lifelong learning through books, journals, audio-visual aids and other available information and communication technologies. The establishment of adequately equipped resource centres is essential if teachers are to profit from this type of professional development.

Professional orientation for school principals and department heads: When promoted or newly recruited as principals, supervisors, co-ordinators, etc., they should benefit from:

- Recurrent organized professional development opportunities.

[1]Revised from *'Competency based and commitment oriented teacher education for quality education'* (pre-service education, 1998), National Council for Teacher Education, C-2/10, Safdarjung Development Area, Sri Aurobindo Marg, New Delhi-110016, India.

- Continuous self-directed professional learning and enrichment.
- Opportunities for learning about international experiences and contacting colleagues in other countries.

Higher professional education: Planning and provision for increased access to higher education (diploma, bachelor, master and doctoral levels).

- Planning and provision for training of high-level specialists in different fields, such as curriculum development, textbook writing and preparation of other teaching/learning materials, evaluation and monitoring, planning and management, research and statistics, etc.
- Adequate planning and provision to prepare teacher educators and resource persons to provide effective pre-service and in-service teacher education at the elementary and secondary levels.
- Provision of opportunities for international exchange.

Enrichment opportunities for teacher educators.

- Provision of opportunities for periodic enrichment of teacher educators through seminars, workshops, presentations and discussion of papers, etc.
- Facilities and opportunities for research and debate on different aspects of education including teacher education.
- Facilities for publication of different kinds of materials on diverse issues relating to school and teacher education.
- Encouraging international contacts.

A sound programme of teacher education needs to include all of these components in a comprehensive and multi-dimensional manner. The first three components cited above are directly focussed on the education of all teachers. The other three components are essential for improving the quality of teacher education in various ways. An effective pre-service teacher education programme serves as a sound basis for implementing and developing each of these additional components.

THE FIRST THREE COMPONENTS OF THE PARADIGM

Within this comprehensive scenario, the first three components call for further examination in view of the urgent need for revision and renewal of teacher-education curricula. The overall objectives are to ensure that elementary and secondary schoolteachers are professionally well-equipped so that they may become increasingly autonomous in their professional growth and, ultimately, maintain their motivation and effectiveness in their role and performance in the classroom, school and wider community.

Pre-service teacher education should be the start of a process of transforming lay persons into competent and committed professional educators. The untrained entrants should possess the requisite educational background and stipulated qualifications. The aim of pre-service teacher education is to prepare the uninitiated to become sound professional practitioners. In the light of this definition the new curriculum for teacher education must be competency-based and commitment-oriented.

In-service teacher education refers to a recurrent, organized and needs-based continuing education for practising teachers so that they may update and enrich their professional competence, strengthen their commitment and enhance their role and performance in the classroom, school and wider community. As new developments take place in the curriculum, educational techniques, evaluation procedures, classroom management and other aspects of school education, new needs will constantly arise for in-service training, calling for recurrent provision.

In addition to these organized efforts, all teachers should be encouraged and given opportunities for continuous self-study related to their own professional needs, interests and responsibilities. A successful and dynamic teacher remains a self-motivated and self-directed learner throughout his/her career. It is this self-directed and lifelong learning that supplements and complements the organized sector of teacher education and becomes an important dimension in a comprehensive paradigm of professional education for teachers in contemporary society.

If these three components of teacher education are to be realized, a major review of existing teacher education provision needs to be undertaken. Any such effort must clearly establish and define the basic competencies required by teachers within prevailing social, economic, and cultural conditions, and also foresee the new educational needs and challenges likely to arise within the initial decades of the twenty-first century.

MAJOR DIMENSIONS OF A COMPETENCY-BASED AND COMMITMENT-ORIENTED CURRICULUM

As one of the important dimensions of renewing the curriculum, five performance areas were identified on the basis of job analysis and needs analysis. The purpose was to improve the quality and efficiency of school education.

It may be noted that these performance areas will give rise to a series of practical activities which include the present programme of 'teaching practice', but in a more realistic and effective manner will cover evaluation procedures and classroom management in different situations, such as multi-grade teaching. However, they also include other important educational responsibilities in which the teacher should be given adequate practical training to develop pertinent skills. Thus, in the field of practical training, these performance areas mark a major shift from teaching practice to broader educational practice in which pedagogical skills remain an integral part, but where the development of other significant practical skills are also given their due place.

1. *Performance in the classroom:* includes teaching and learning processes, evaluation techniques and classroom management.
2. *School-level performance:* for greater all-round contribution to school organization and management.
3. Performance in extra-curricula and out-of-school activities.
4. *Performance related to parental contact and co-operation:* for improved enrolment, attendance and student achievement.

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5. *Performance related to community contact and co-operation:* should focus on improving school-community relationship for mutual development and enrichment.

In order to equip teachers adequately in these performance areas, ten sets of competencies have been identified for curriculum renewal. These are designed to provide adequate theoretical and conceptual understanding, empowering teachers to perform their responsibilities with professional insight and confidence. In essence, these are teacher competencies that should aim at the development of learner competencies and qualities at school. To achieve these multiple goals, teacher competencies include relevant conceptual elements, content elements, contextual aspects, transactional and evaluation aspects, etc. All the ten competency areas thus identified converge on one or more of the performance areas and interrelate theory and practice in a focused manner.

These competencies are first to be developed during pre-service teacher education and further updated and strengthened during recurrent in-service teacher orientation, as well as through continuing and self-directed professional enhancement.

TEN COMPETENCY AREAS

1. *Contextual competencies.* To provide a wider view of the development of education in society and the teachers' role in it.
2. *Conceptual competencies.* Includes the concepts of education and learning, psychological, sociological and neuro-physiological aspects of education, etc.
3. *Curricular and content competencies.* According to specific levels of education.
4. *Transactional competencies.*
5. *Competencies related to the organization of school level and extra-curricular activities.*
6. *Competencies related to teaching/learning materials.* Includes their selection, use and preparation and should include new information and communication technologies, where applicable, and existing local resources.
7. *Evaluation competencies.*
8. *Management competencies.*
9. *Competencies related to parental contact and co-operation.*
10. *Competencies related to community contact and co-operation.*

While every teacher must master professional competencies, such as those enumerated above, it has been observed that, by themselves, they do not necessarily result in effective performance. The actual performance of trained teachers in the classroom or school is equally dependent—if not more dependent—on their levels of commitment and motivation. The task of fostering professional commitment among teachers must become an integral part of pre-service and in-service teacher education. Towards this end, five commitment areas have been identified.

1. *Commitment to the learner:* concern for the all-round development of all pupils.
2. *Commitment to the society:* awareness of, and concern about, the impact of the teaching profession on the development of the community and the nation.
3. *Commitment to the profession:* development of a professional ethic and sense of vocation.
4. *Commitment to excellence:* in all aspects of a teacher's roles and responsibilities.
5. *Commitment to basic human values:* to become a role model in the classroom and community through genuine and consistent practice of professional values, such as impartiality, objectivity and intellectual honesty.

The potentials and challenges of information and communication technologies (ICTs) for education: the training of teachers

Jean-Marie Sani

Introduction

Information and communication technologies (ICTs) have a number of characteristics that permit significant innovation in pedagogical methods at all levels of education. These include the following:

- The digitalized form of information allows storage and dissemination of all types of data on computers (text, sound, still pictures, moving pictures), since all are encoded in the same format—a succession of digits (0, 1).
- New possibilities for distance communication, whether simultaneous or deferred, permitting collaborative projects between classes, schools or the development of professional networks among teachers.
- The development of these distance communication techniques has led to a new structuring of information, bringing with it a new way of reading and discovering texts. 'Hypertext' permits the combination of linear reading with rapid connection to related texts, each linked to the other. Multimedia encyclopaedias are a good example of the very useful hypertextual organization of information.
- Multimedia is becoming the principal way of presenting information, allowing information to be presented in different forms, with the result that it is more diverse and take up less space.

New classroom practices with ICTs

In the classroom, two main tasks may be identified in the use of these technologies:

1. *Mastering the technology:* the use of ICTs in education can permit both pupils and teachers to acquire skill in the use of these technologies, particularly in exploiting the computer, as these machines become essential everyday tools in contemporary societies. This objective is in accordance with the aims of vocational education, i.e. to teach skills that will equip learners to enter the job market.
2. *Tools for learning:* if used effectively, ICTs can enhance the possibilities for instruction and learning for all pupils at all levels of schooling. They should, however, be seen as supplementing rather than replacing the more traditional but proven educational tools and methods. They may be used in the instruction of all disciplines, as well as for interdisciplinary or cross-curricular projects. ICTs may also enhance learning in the following ways:

- *Searching for information:* The use of CD-ROMs or the Internet requires knowledge of research methods, such as those used in traditional library research, i.e. documentary research. To find the right answers to specific questions, it is necessary to identify keywords, find appropriate sources, and select relevant information from the identified resources. This process requires the development of critical abilities in order to assess the quality and validity of the information retrieved. The teacher's role is essential so as to develop documentary research and critical thinking skills in students. This responsibility cannot simply be delegated to the computer, which remains a tool to be suitably exploited.
- *Summarizing the information.* As with the above, the ability to summarize the information obtained is not a new objective of schooling. Again, it is the technology that allows a new *way* of formulating and presenting the information (as in an HTML file). Developing the ability to summarize and reformulate retrieved information should be one of the major objectives of learning. ICTs are ideal tools for developing this skill.
- *Distance communication.* Several sorts of communication are possible :
  (a) *Among teachers.* Using electronic mail, newsgroups or websites, teachers can share their ideas, experience and innovations. This may be a very effective and rewarding means of professional development, as there are already numerous sites, newsgroups and networks devoted to education covering wide geographical areas and subject ranges.
  (b) *Among classes or pupils.* This use is less developed because it is more difficult to realize. However, it has tremendous potential for developing the concept and practice of living together, of intercultural communication and international understanding. Classes in diverse geographical locations may collaborate together on a project, with the contribution of not only individual and collective student abilities, but also context-specific knowledge and data from the participating regions/localities. For this type of activity to be carried out successfully, teachers must be properly trained and the technical possibilities of networks and the available software (in particular the transmission speed) must be improved.
  (c) *Between teachers and groups of learners.* A new style of communication is being invented between

teachers and learners in a distance-learning context. It no longer should be considered sufficient, for instance, to follow a lecture via a video-conferencing system. Nowadays, multimedia materials may be used to enhance instruction. Teaching styles have to evolve to keep pace with these technologies.

However, three principal challenges confront the effective exploitation of these technologies in schools:

- the price (of computers, of software and of communications);
- the capacity of telecommunications—which should exceed 2Mbit/sec;
- the development of software with greater capacities, especially for the sharing of documents.

In conclusion, it should be emphasized that the use of ICTs as a tool, like any other means of instruction, such as books, videos or mere observation:

- may be used for all disciplines: science, technology, languages, history, geography, art, as well as for transdisciplinary projects.
- should supplement—not replace—other tools for teaching and learning. Pupils need to remain in close touch with the reality around them; they need to touch, manipulate, build and experiment with the natural world.

The changing role of the teacher

In the traditional teaching-learning relationship, the relation between the teacher and the pupil is frontal—the role of the teacher is to deliver knowledge to the pupil. There is some co-operation among pupils.

FIGURE 1: The traditional frontal pedagogical relationship

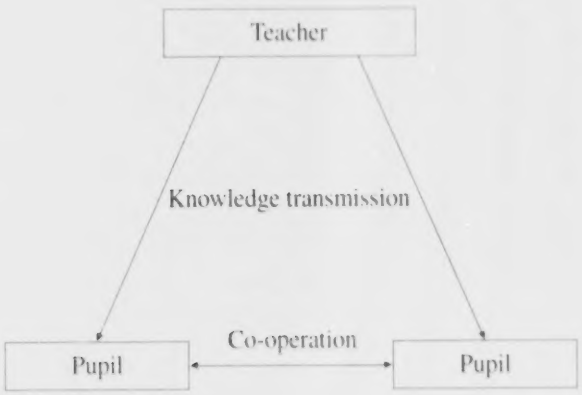
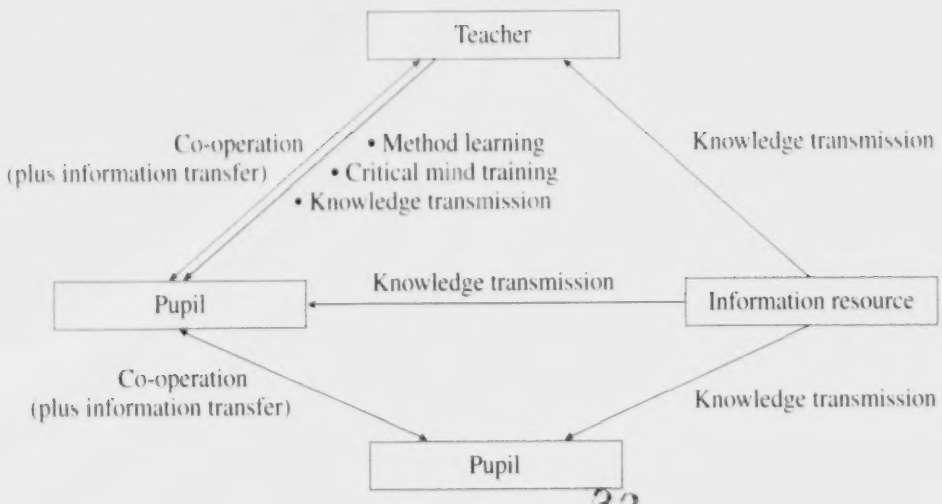


FIGURE 2: The new pedagogical relationship



Often teachers do not possess adequate knowledge and skills for the effective exploitation of ICTs. In many cases, they are less expert than their pupils. Furthermore, there is likely to be confusion in the teacher's mind about his/her new role in relation to the use of these technologies, i.e. teachers find themselves in a situation where they are no longer the principal source and deliverer of information. If teachers are going to find themselves less capable of making effective use of ICTs in the classroom, they need first to be properly trained in pedagogical skills, so as to have adequate knowledge for developing pupils' learning abilities. The skills needed to use computers as tools for learning are similar to those needed to exploit other more traditional tools: how to transform information into knowledge; how to develop a critical mind; how to make links among different sources and types of information; how to find the right answers to the questions rapidly. The teacher's role remains vital in transmitting and developing these skills.

The effects on the organization of the class

With these technologies, the traditional way of organizing teaching/learning activities may change, with many forms being used in different combinations: individual or whole class work; small group research; out-of-classroom activities, such as research in libraries. This would lead to changes in the organization of the class, the duration of lessons—perhaps even in the architecture of the school.

New teacher profiles?

This evolution of the teaching/learning process may eventually lead to a transformation of the teaching profession, with new teacher profiles emerging.

- *The subject specialist.* A situation may develop where there are a limited number of specialists in specific subjects in different parts of the world. Schools may enter into distance education relationships with these experts.
- *The expert in the learning process.* This second type of teacher will have expertise in the learning process. His/her relationship with the learner will be face-to-face.
- *The evaluation specialist.* A third type of teacher profile may evolve: the evaluation specialist. Evaluation is going to become an increasingly complex operation demanding specific skills and the trend may be for pupils to be evaluated by persons other than their teachers.

The training of teachers

Considering these possible important transformations, the adaptation of the teacher-training system becomes a fundamental issue. Two aims of training may be identified:

Preparing teachers for the introduction of ICTs in the classroom:

- It is necessary for teachers to become skilled in operating the new technologies and in exploiting them effectively as educational tools.
- Teachers must master the use of information—skills of research, critical analysis, linking diverse types and sources of information, reformulating retrieved data—if they are to teach their pupils to develop these same skills.
- There needs to be more emphasis placed on training in pedagogy, as opposed to the current trend in many education systems where the major focus is on specialized knowledge in specific curricular subjects. Teachers must be adequately equipped with more didactic competencies so as to assume their new role as experts in the learning process.

Using ICTs as tools for the training of teachers. As sources of information and expertise, as well as tools for distance communication, ICTs offer many new possibilities for teacher education. Teachers may learn new forms of communication through the regular use of these technologies. Use of new media, new rules of communication—even a new language—have to be learned.

Conclusion

A possible economic counterbalance. ICTs are expensive and at present are very unequally distributed around the world, with the developed world having by far the greater share. Nevertheless, it must be recognized that these technologies offer great possibilities for poorer countries, with a reduction in the importance of distance and an increase in the potential for new competitivity. In the coming years, considerable investments in infrastructure, equipment and training are needed if countries are to incorporate the use of ICTs into schools as an integral part of the teaching/learning process.

A real stake in the process of globalization. These technologies offer vast opportunities for the development of contacts and exchanges with the rest of the world. For this to become a possibility for all, however, it will be necessary for prices to fall, a transfer of the necessary technical knowledge, as well as the constant need to keep pace with the evolution of existing technologies. These factors are all realizable and, when they come about, all countries in the world may share a major transformation of education—as we know it today.

The potentials and challenges of information and communication technologies for education: globalization of education, adaptation of curricula, new teaching materials and the networking of schools

M.M. Pant

Introduction

All new technologies initially provoke reactions ranging from apprehension, to caution, to curiosity, to excitement and expectation. There is considerable scepticism on the part of educators with regard to the potential impact of the new technologies on schooling, since the anticipated impact of earlier communication technologies—such as radio and television—has not been realised.

While communication between learners and mentors is the essence of education, in the traditional learner/teacher paradigm, teachers largely dictate facts (that they themselves may not necessarily comprehend) to pupils who often just reproduce them on paper without interpreting or understanding them. For education to be effective, it is essential that there be more opportunities for student participation in the learning process, more teamwork, more self-study and self-evaluation, as well as more peer-evaluation, and less examination-oriented teaching and learning. It is felt that the new technologies can assist in the promotion of more student-centred and interactive learning.

What are ICTs?

ICTs can be briefly summarized as the result of the convergence of technologies—telecommunications and television have merged with informatics. The computer, which can be described as an engine of the mind, has tremendous capacity to store and process data, to produce and disseminate information. With the emergence of diverse multimedia and networking possibilities, computers have increasing potential as tools for innovative teaching and learning.

The new technologies have enormous potential to revolutionize education as we know it, dramatically transforming schools. For the first time in the history of education students are proving more adept at mastering delivery systems than their teachers. It is obvious that the monopolies enjoyed by schools as formal education providers will diminish, with a lot of educational exposure and experience in future being provided outside these institutions. The scope of the new technologies for transforming existing educational provision is enormous and includes the globalization of education, the adaptation of curricula, new teaching materials and the networking of schools.

The impact of the Internet on education

The development of the Internet has already had a very significant impact on the structure of higher education provision. Traditional distance education institutions are fast changing to leading-edge 'virtual universities'. Today there are about 800 'cyber colleges' in the United States, with approximately 1 billion students plugged into 'virtual classrooms' compared to 13 million enrolled in traditional institutions. By the year 2000, this number is expected to triple. It is anticipated that fifty years from now, most of the professions will be taught through the Internet, causing many regional institutions and smaller universities to disappear. Bureaucratic structures are likely to diminish and there will be increasing use of information technologies and resultant networking and partnerships to convey resources for the running of institutions.

Technological developments are leading to accelerating convergence between education and industry and between formal and non-formal education:

- Business organizations are becoming learning organizations;
- Distinctions between formal education and distance education are being reduced resulting in integrated classrooms;
- Lifelong education and training will become increasingly the norm;
- Through technology, education is becoming more closely linked to entertainment.

Some of these changes taking place at the level of higher education are likely to filter down to schools. Already in the United States, 'virtual high schools' are being established. Liberal entry and exit between the school system and the world of work may become increasingly possible.

Syllabi and courses

It is foreseen that traditional educational institutions, both universities and schools, will have to make important adaptations to the new technologies. Their offerings will become diverse and flexible. Courses of studies in traditional classrooms will no longer meet the public demand for tailored educational services, especially at upper secondary and higher education levels. There is likely to be a move from rigid one-time, full-time, on-campus education to diverse programmes of lifelong learning. The content of courses will need to assume a more global di-

mension, with cross-cultural variations becoming more evident

The new educational enterprise will be developed around student outcomes and rigorous evaluation of achievement. The new technologies are also creating a demand for a range of basic competencies, including: improved numeracy skills, communication skills, technical skills and skills in creativity and design, the ability to work with and relate to others, to manage tasks and solve problems, and to foster one's self-development through lifelong learning. In the area of vocational education, there is scope for many new courses including Web design and Web publishing, repair and maintenance of personal computers, office records management and retrieval systems.

These changes are likely to lead to the development of outcomes-based education where each learning outcome will be defined, assessment criteria for each outcome will be clearly stated and guidelines for generating evidence of learning achievements will be laid down.

Teaching methods and strategies, as well as accreditation and certification, will have to change significantly to meet these new demands. The professor/teacher will no longer dominate the teaching/learning process: Students will assume greater autonomy and responsibility for their learning. The teacher will become more of a coach, animator and co-explorer with his/her pupils. The process of learning will be emphasized more than specific detailed subject content, while learning will become more flexible and interactive. In some situations, the technologies make education more affordable.

With the use of a variety of new technologies in instruction, it is imperative to assess the extent to which true learning occurs. Sophisticated assessment methods need to be developed to measure and certify learning competencies.

Challenges to the introduction of ICTs in education

Incorporating the technologies successfully into schools requires careful advance planning and preparation. Significant financial and human resources are required, with training an essential component of the process. Redundant and robust systems must be put in place. Innovators have to be prepared to confront bureaucracy and conservative attitudes, including resistance by teachers and other educational staff.

Summary and conclusions

- ICTs will have a deep impact on the way formal education is carried out;
- The rate at which we have to respond to changes affecting education is much faster than ever before;
- It is urgent to realign the curriculum framework to provide outcome-based, flexible learning paths leading to mastery learning;
- Training and orientation of teachers, administrators and students to the new learning technologies is an immediate requirement;
- By sharing courseware and learning resources developed in different parts of the globe, innovative and relevant curricula can be rapidly developed and made available to learners in poor as well as rich countries.

Learning to live together: the need for vocationalizing the curriculum

Arun K. Mishra

Although the objective of developing employable skills and competencies during upper secondary education is included in Indian national education policy documents and the curriculum framework, in reality skill development courses at this level are virtually non-existent in schools. The concept of 'learning to live together' is likely to be confined to the informal settings of family and local community.

How may a vocational curriculum lead to a better understanding about the culture and ways of life of different countries and the common principles of living in a global village?

The vocational or pre-vocational curriculum lends itself to the possibility of organizing concrete opportunities for students to collaborate for the good of the group, the class in general, the school or the wider community. Many skills may be taught through services that benefit the community as a whole, bringing the school closer to its environs and helping pupils to become aware of their commitments to school and community. Co-operative activities can promote friendship, communal harmony and empathy for others.

All vocational education programmes and activities should stress the concept of sustainable development with a focus on fostering awareness of key environmental concerns and the rights of all to a decent standard of living.

In India, work experience is an integral component of the primary and secondary school curriculum. By the lower secondary stage, skills taught through this programme can be described as pre-vocational. Knowledge and skills taught are expected to be directly relevant to the prevailing developmental and economic activities of the community.

Here are some suggestions for content of pre-vocational curricula or work-experience programmes, particularly within a rural context:

- Management of water for domestic and agricultural purposes;
- Development and use of alternative sources of energy;
- Food production, preservation and storage;
- Machine maintenance and repair;
- Handling and use of fertilizers and other chemicals;
- Information management for rural development.

PART III:

INTERDISCIPLINARITY, SCHOOL-BASED MANAGEMENT AND NON-SCHOOL SCIENCE EDUCATION: A FEW TOPICS FOR REFLECTION BY CURRICULUM DEVELOPERS

Adaptation of contents to address the principle of learning to live together: the case for interdisciplinarity

Ellen-Marie Skaflestad

Introduction

During the last two or three generations, great changes have taken place in the living conditions of the young. In many countries, both parents spend more time away from the home at their place of work, while their children's links to the world of work and the learning that may be acquired there have waned. The impact of the mass media has grown continuously over the last decade, and schools have become increasingly multicultural.

Social change is no longer an episodic set of events interspersed by periods of stability. Advanced societies are now open to a continuous process of change, difficult to predict scientifically and control socially. These societies are dynamic rather than static, and complex rather than simple entities. Advanced societies are 'risk societies' (Elliott, 1998). Social change has ambiguous consequences for the individual. It opens up new possibilities for human fulfilment, but multiplies the risks and hazards that confront the individual in achieving this fulfilment. In these circumstances, responsibility for shaping the conditions of existence in society should be devolved down to the grassroots—to the people themselves. Education can only meet the challenge of social change if it gives all pupils access to appropriate cultural resources in a form that enables them to take responsibility for actively shaping the economic and social conditions of their existence.

The organization of the curriculum in terms of academic subjects for the purpose of systematic instruction is ill-suited to the aim of a general education. More consistent with such an aim is a curriculum that organizes cultural resources in usable forms for the purpose of enabling pupils to deepen and extend their understanding of the problems and dilemmas of everyday life in society, and to make informed and intelligent judgements about how they might be resolved. Such a curriculum will be responsive to the pupils' own thinking and their emerging understandings and insights into human situations.

Educational change implies a focus on both curriculum and pedagogy, and on the development of teachers as experimental innovators. Learning has to be connected with the living experiences of students in a rapidly changing society. Different conceptions of education and of the curriculum presuppose different conceptions of society and the principles governing access to its 'benefits'. Recent trends in curriculum policy-making reflect the dilemmas with which all 'advanced' Western states are wrestling. States feel that they need to steer the curriculum in ways that are consistent with their economic goals, but find that the context of policy implementation is too complex to handle from the centre. The dilemma is illustrated by, on the one hand, attempts at the State level to establish national educational standards through the concept of a core curriculum which will command a public consensus, and on the other, by pressure on schools to respond to the complex changes taking place in their locality.

However, it is clear that the idea of the curriculum having a unifying function in a diverse learning environment, combined with the emergence of the comprehensive common school, has gained strength in many societies. General education can be defined as 'that part of the student's whole education which looks first of all to his life as a responsible human being and citizen' (Harvard Committee, 1945, in Elliott, 1998). The notion of citizenship should be central to defining the character of general education. Without it, general education tends to be defined as a common core of knowledge, skills, and values—a definition that fails to draw attention to basic curricular concerns, such as what knowledge is most worthwhile and what aims and objectives are best suited for schools in democratic societies.

General education is more than a function of the curriculum; it is also an orientation to learning and to curriculum design. Generally speaking, all education justified under general education should emphasize a socio-civic content that promotes problem-centred inquiry and group co-operation. General education should also be marked by interdisciplinary subject-matter schemes. The learner in this general education scenario is defined as an autonomously thinking, socially responsible citizen who is able to make decisions. In a broad sense, it is a perspective on learning that emphasizes citizenship priorities. Thus, the consequence of general education is a comprehensive concept of schooling (Hlebowitsh, 1993).

The connective model of the curriculum

Conceptions of knowledge underlie curriculum development and can be defined in either of two ways: 'Curriculum as facts' and 'curriculum as practice' (Young, 1998). 'Curriculum as facts' tends to have a life of its own and obscures the social contexts in which it is embedded. It often results in the curriculum being neither understandable nor changeable. 'Curriculum as practice' does not begin

with the structure of knowledge, but with how knowledge is produced by people acting collectively. According to Young, this connective model of curriculum integration does not start with subjects but with the broader notion of curriculum purposes and how subjects can achieve those purposes. It does not start from the requirements of the national curriculum, but with individual schools defining their curriculum purposes and asking how they can be made to correspond to the requirements of the national curriculum.

Schools need to define their purposes in terms of the kind of young person they want to produce, and the kind of adult, worker, citizen and parent roles they wish young people to assume. For schools to move towards a connective model, all staff need to endorse the curriculum criteria and agree to articulate how their subjects or areas of responsibility would be involved—both in supporting shared approaches to teaching and learning and in delivering the agreed outcomes. The model is 'connective' in the sense that subject specialists would be required to connect their subject teaching to: (a) the purposes of the overall school curriculum; and (b) the way other subjects are contributing to the overall school curriculum. According to Young, the role of subjects would need to be made explicit in at least three ways: first, by identifying the specialist skills and knowledge they can offer; second, by showing how any of the specific skills and knowledge of particular subjects can contribute to the broader curriculum goals, such as personal and social education through collaboration with other subject specialists; and third, by identifying the contribution of subject specialists in enabling schools to develop their external links with employers, the community and other education providers.

The Norwegian National Curriculum: a connective curriculum model?

Changes in society and the structural changes in education have made it necessary to re-examine the guidelines governing the purpose and content of education. An agreed minimum values framework has been developed in a number of countries, in the search for the common good. Thus, the process of promoting a consensus of values represents a negotiated view of the common good in a given society at a certain period of educational reform. Globalization in education should mean that there is one ultimate goal to be supported by general education in all countries—how to make citizens able to understand both the local and global societies well enough to learn to live together and act as responsible citizens in local and global terms.

When large-scale reforms were being introduced in primary, secondary and higher education in Norway, it seemed natural and fitting to provide a common formulation of the common core of the curriculum, with a view to emphasizing how the stages of education are linked together, not forgetting adult education. Interdisciplinarity has to be considered not only across the curriculum at a certain stage or level of schooling, but in a vertical structure as well. Consequently, curricular reforms are to be seen as a macro-educational planning process. How the reform concept is interpreted is dependent on the social, political, economic, cultural and educational conditions of a country. It is a policy issue to define the context of change, and to view and be willing to develop a holistic reform strategy, where elements of change are linked and provide for interventions enabling curriculum implementation to be realized.

The starting point for the overall work on revised curricula for the different levels of the education system in Norway is to be found in the following Acts of Parliament: the Primary and Lower Secondary Education Act; the Upper Secondary Education Act and the Vocational Training Act; the Adult Education Act and Folk High Schools Act. The main themes in the relevant sections of these acts fell into the following six groups:

- moral outlook;
- creative abilities;
- work;
- general education;
- co-operation;
- natural environment.

The common core of the curriculum expanded on these themes. The introduction to the 'Core Curriculum for Primary, Secondary and Adult Education' in Norway states that the aim of education is to furnish children, young people and adults with the tools that they need to face the tasks of life and surmount its challenges. Education shall provide learners with the capacity to take charge of themselves and their lives, as well as equipping them with the will and determination to stand by others. Education must spur students to diligence and to close collaboration in the pursuit of common goals. It must promote democracy, national identity and international awareness. In short, the aim of education is to expand the individual's capacity to perceive and to participate, to experience, to empathize and to excel.

It was recognized that if education is to achieve these aims, a number of concepts of the human being, illustrating our complex and diverse roles and identities, need to be defined for curriculum development. These include:

- The spiritual human being;
- The creative human being;
- The working human being;
- The liberally-educated human being;
- The social human being;
- The integrated human being.

Education should ultimately form integrated human beings possessing seemingly conflicting capabilities, attitudes, values and skills which permit him/her to lead a full and meaningful life, actively contributing to the common good, yet maintaining his/her own identity and dignity. From this perspective Norwegian education aims to:

— convey the culture's moral values, with its concern for others, while fostering the ability to plot one's own life course;
— provide familiarity with Norway's Christian and humanist heritage, while teaching knowledge of and respect for other religions and faiths;
— teach individuals to overcome self-centredness and belief in the right of the strongest, while inspiring strength to stand alone, to stand up for oneself, dissent and not to acquiesce or submit to the opinions of others unwillingly;

— develop an independent and autonomous personality and, at the same time, to be able to function and work as part of a team.

A number of dual aims are listed in the core curriculum, and the final statement is:

Education must balance these dual aims. The objective is an all-round development of abilities and distinctive qualities: to conduct oneself according to accepted moral principles, to create and to act, to work with others and in harmony with nature. Education shall contribute to the building of character that gives individuals the strength to take command of their own lives, to assume duties within their society and to take care of the surrounding environment.

When greater knowledge gives greater power, more stress must be placed on the responsibility that accompanies this power. The choices to be made must be based on awareness of consequences and connections, but should also be guided by a scrutiny of values. A distinct precept of education must be to combine greater knowledge, know-how and skills with social awareness, ethical orientation and aesthetic sensibility. The young must be involved in social life, both individually and in a normally coherent way. Education shall promote ethical and critical responsibility in the young for the society and the world they live in.

The ultimate aim of education is to inspire individuals to realize their potential in ways that serve the common good; to nurture humanness in a society in development.

Operationalization of the core values in primary and lower secondary curriculum: the case for interdisciplinarity

During the 1990s, new curricula have been approved for Norwegian primary and upper secondary education. There are two main differences between the old and new curricula for compulsory education.

The first of these differences is the degree of freedom of choice regarding syllabus content and working methods. The former curriculum allowed local authorities, schools and individual classes a relatively large amount of freedom to decide and allocate the syllabus content at each level. To a great degree, the choices made corresponded to the content of the particular textbooks chosen. Therefore, there were considerable differences in the syllabuses taught from school to school, and district to district. The new national curriculum is based upon a national syllabus. Teaching objectives are set out for each stage (e.g. for age 8 to 10), and instructions about what is going to be taught are formulated.

The other important difference concerns the working methods. The old curriculum *recommended* pupil-oriented, challenging, working methods. However, more often than not, teaching and learning followed traditional methods. The new curriculum *demands* that schools, teachers and pupils implement pupil-oriented, challenging, working methods. This is evident in the curricula's general directives, the language used to describe objectives and main features, and the emphasis upon theme-based study and project work.

The compulsory school is a nationwide ten-year school characterized by community and adapted education, which means an all-inclusive school in a co-ordinated school system based on the same curriculum. Adapted education means that it is locally and individually adapted, and takes into account gender equality and linguistic minorities.

The subject curricula are structured according to principles on centrally selected material, local material and adaptation, progression and more subject-specific teaching within a holistic and unified perspective. In the subject curricula, the selection of contents aims at promoting:

— fundamental values, cultural heritage and identity;
— creative abilities and creativity;
— all-round practical skills;
— basic knowledge and broad understanding;
— the ability to co-operate and independence;
— knowledge and awareness of nature, the environment and technology.

It is specified that fields of knowledge across subject boundaries are to be topics related to contemporary society and the individual and society.

Teaching methods must include creative activities and modes of expression, play, practical work, independent work and in-depth study, and project work at all stages.

The structure of the subject syllabi is as follows: (a) introduction; (b) subject-related aims; (c) subject-related objectives for each stage (primary, intermediate and lower secondary); (d) subject-related areas of study for each grade. There are no individual objectives or targets related to the areas of study described. The objectives are an expression of the competence of the pupils to be achieved at each stage of schooling. This provides important possibilities to schools and teachers to teach according to interdisciplinary themes and topics, in particular within the framework of project work. This focus on an interdisciplinary approach is expressed as follows in the curriculum document:

Although the curriculum is arranged by subjects, it has been designed so those subjects support each other. Aims, objectives and areas of study must be viewed in relation to each other with a view to unity and connections, both within and between subjects. At the primary level, much of the teaching is organized around themes. Structural and thematic connections between subjects and subject areas should be exploited throughout schooling. This helps pupils to develop overall understandings and to make the most of knowledge and skills across subject boundaries.

Certain fields of knowledge to be taught across subject boundaries have been identified, such as topical issues related to:

— *Contemporary society*—nature and environment, international understanding, human rights and peaceful co-existence, technology, information and communication technology, knowledge of the media, working life and vocational guidance, consumer knowledge, road safety.
— *The individual and society*—the family, sex education, homosexuality, preventive health work, drug abuse, crime prevention, bullying and violence.

The thematic structure of contents shall be based on the experience, interests and understanding of pupils, on connections with the local environment and on topicality. The methods to be used are creative activities and modes of expression in all subjects, practical and independent work, project work and in-depth study. Local work on subject curricula should mainly be decided by individual schools or co-operating schools. It shall establish the foundations for teachers' planning their lessons at all levels. Clear connections between the centrally and locally defined educational content of the teaching must be established, and the aims of the general part of the national curriculum should be borne in mind.

Co-operation at school and with the wider community

Co-operation between pupils, teachers and the school administration is essential to the development of the school in terms of creating a learning environment and a place for work. Such co-operation can strengthen the context and possibilities for interdisciplinary perspectives and approaches, helping pupils to see the interconnectedness of learning, and the links between school and the wider community. For the pupils to be included in a social, academic and cultural community, the staff of the school must co-operate, providing a model for the pupils. Co-operation will enable pupils to learn from each other, developing social skills and gaining insight into democratic methods.

It is stressed that the school should develop general social and civic awareness and active involvement in the life of the community. By encouraging pupils to approach new tasks and challenges actively, constructively and deliberately, the school lays the foundations for further learning and helps pupils to master their future work, and their participation in family and social life.

Practical work and project work

Important emphasis is given to practical and project work. Practical work is supposed to form an integral part of all classroom activities and should be designed so as to show pupils the connections between practice and theory and between action and knowledge.

Teachers must provide adequate opportunities for independent work and in-depth study of subjects and subject areas, and in theme and project work. Emphasis should be on teaching research and analytical skills and on developing study methods and working habits which equip pupils for independent work and in-depth study, as well as group work. Teachers are expected to work closely with pupils in realizing projects.

It is stated that project work lends itself to both a single subject and an interdisciplinary approach, and can be linked to specific local themes. Teachers are expected to co-operate with each other to ensure that project work has an interdisciplinary character.

Allocation of time

School time must be allocated as appropriate to the various activities, bearing in mind the need for unity, continuity and progression in subjects considered separately and together. At lower secondary level, 20% of periods in each year must be devoted to theme and project work.

Conclusion

Challenges for curriculum development in our time are to find ways of integrating general education and subject syllabuses—to organize knowledge for teaching and learning into meaningful units. The need for interdisciplinarity is obvious if knowledge is to be made really meaningful in a holistic way for the individual pupil.

The Norwegian model of the curriculum for primary, lower secondary and upper secondary education might be identified as a connective curriculum model. The outcome of the curriculum reform is presently being evaluated. Research-based evaluation will give some feedback on the success of operationalizing the curricula for a better quality of learning.

The former Minister of Education in Norway, Mr Gudmund Hernes, stated that the main message of the curriculum reform can be summed up like this: *The most important of all pedagogical tasks is to communicate to children and young people that they are developing continuously in such a way that they can have confidence in their own abilities.* This may be seen as our common curriculum challenge for the next century as well.

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Victoria's schools of the future

Kenneth Ross

CONTEXT

Victoria is an Australian state with a population of approximately 4.5 million people. In 1996/97, there were 1,700 government schools providing education for 5- to 18-year-olds. The majority of these were primary schools. Another 673 schools were in the non-government sector. Total enrolments were 777,368 students, 517,882 of whom were in government schools. Twenty-five per cent of all Victoria's government schools cater to students from non-English speaking backgrounds, with a small proportion of students from an Aboriginal background.

The formal education system consists of primary schools from preparatory (P) grade to grade six (ages 5 to 12) and secondary schools from grades seven to twelve (ages 12 to 18). Most students (approximately three-quarters) complete thirteen years of schooling and attain the Victorian Certificate of Education (VCE). The total number of government schoolteachers in 1996/97 reached 18,159 in primary and 16,902 in secondary schools.

School education is supervised by the 'Office of Schools', which is divided into nine regions for administrative purposes. The Office of Schools is located within the Department of Education[1] and manages the government school system. Several administrative units, including the Office of School Review, in charge of accountability framework, and the Board of Studies, in charge of the curriculum framework, support it. The Office of Schools reports to the Secretary of Education (the public service head) who reports to the Minister of Education. The latter has ultimate responsibility for the school education portfolio.

HISTORICAL DEVELOPMENT

Australia began decentralizing power and authority to schools nearly thirty years ago. In the 1960s, the education system was highly centralized; the states made all key decisions on curriculum, budget and personnel. From the mid-1970s, Victoria became one of the leading states in the move towards a fully decentralized system of education. Between 1980 and 1992, a number of initiatives were taken by successive governments to devolve aut[illegible]y and responsibility progressively to schools. These [illegible] culminated in a policy paper entitled 'Education: g[illegible]a-dents a chance', published in late 1992 by th[illegible]beral Government. It outlined that quality education can best be achieved by transferring educational decision-making and resource management to the school level. A 'Schools of the Future' (SOF) Task Force was formed to develop a detailed report outlining the government's objectives and how quality education would be delivered. The task force released the SOF Preliminary Paper in 1993, which revealed that the key to schools' effectiveness would be a 'school charter'. The 'Schools of the Future' Programme and other legislation has increased the powers and responsibilities of school councils and principals dramatically. Victoria's principals have been placed on limited tenure contracts and local selection of staff was introduced.

The speed with which this reform was institutionalized warrants an explanation. In March 1993, the government asked for applications to place 100 of the state's schools into a pilot programme. The programme aimed at providing 'virtually full authority over the budget and personnel function to the school site'. Within a six-week period, over 700 schools applied, and in July 1993, more than 300 schools entered the first phase of the SOF programme. By early 1994 another 500 schools had entered the programme and an equal number in July 1994. By mid-1995, all Victoria's schools were in the SOF programme. In an attempt to assist schools to understand their self-managing role, the Directorate of School Education published two information kits in 1994. To assist schools to formulate and implement procedures to achieve their respective visions, a Curriculum and Standards Framework was created. This is a framework within which schools are able to create their own programmes, whilst taking into consideration the identity, aspiration and interests of their teachers. The Board of Studies provided curriculum frameworks for all schools, while the Office of Schools Review developed charter guidelines and an accountability framework.

[1] At the inception of the 'Schools of the Future' Programme, the current Department of Education was referred to as the Directorate of School Education (DSE). Both DSE and DOE are used interchangeably in this chapter.

THE SIGNIFICANCE OF THE VICTORIAN EXPERIENCE

Victoria's model of school-based management (SBM) has two distinguishing dimensions: (a) the involvement of both internal and external constituencies, such as the principal and the representatives of the staff, parents, community and, in the case of secondary schools, students; and (b) the decentralization and devolution to the school level as against the district or the local education authority level, as is the case with other countries, such as in the United States of America or the United Kingdom. Victoria's experience of SBM, through the SOF Programme, is thought to represent one of the most comprehensive strategies at school decentralization attempted anywhere in the world. It is the most sweeping move to decentralization in the history of Australian public education, with nearly 90% of recurrent expenditure distributed to schools within a global school budget. Victoria is the largest system of public education anywhere in the world to have decentralized such a large part of the state budget for school education. The stated objective of the reform was '[to improve] the quality of education for students by moving to schools the responsibility to make decisions, set priorities and control resources'. Accordingly, SOF is intended to 'make more efficient use of resources for the benefit of students, provide a more professional workplace for teachers, and increase the level of community knowledge of, and satisfaction with, schools'. Basically, the reform has four elements, as shown in Figure 1.

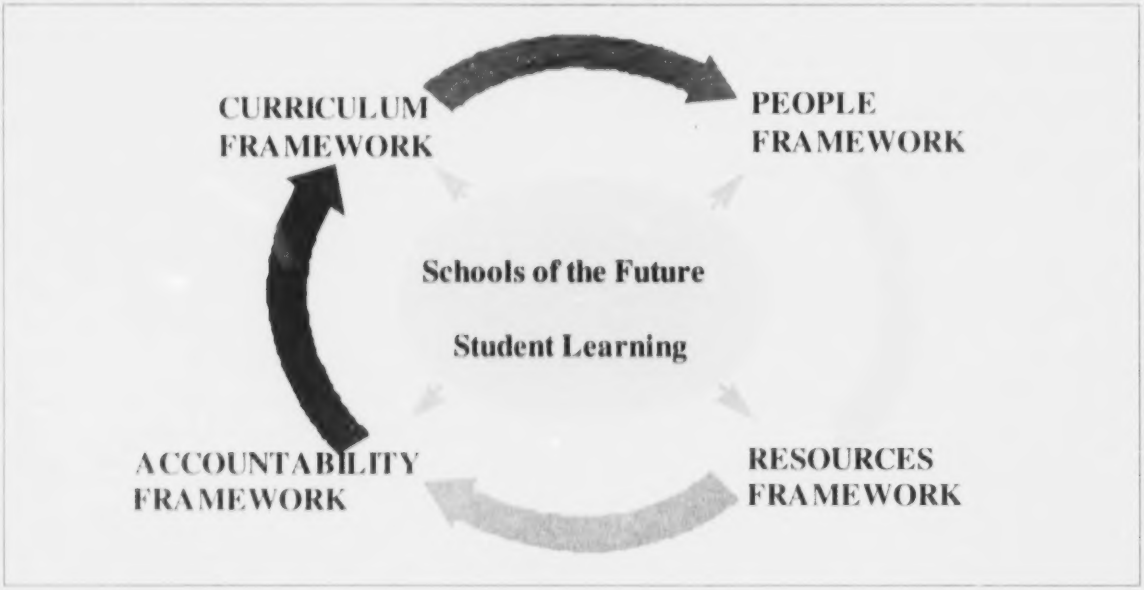

FIGURE 1. The dimensions of schools of the future.

- **The curriculum framework:** the process of decentralizing the curriculum made standards for student attainment explicit. The framework consists of two elements: the curriculum and standards framework (CSF) for years Prep to 10 (P–10) in eight key learning areas (KLA); and the Victorian Certificate of Education (VCE) for years 11 and 12.
- **The people framework:** The career structures of principals and teachers were addressed in the people framework, consisting of five elements: (1) local selection of staff; (2) full staffing flexibility and workforce planning; (3) performance management for principals and teachers; (4) professional development; and (5) new career structures.
- **The resources framework:** allocates 90% of the school's recurrent budget directly to the schools; gives schools the flexibility to allocate all resources in accordance with student learning needs; and funds schools in a clear and equitable way through the school global budget.
- **The accountability framework** has three elements: the school charter; the annual report; and the triennial review. 'Quality Assurance in Victoria's Schools' is the main mechanism through which the performance of schools is monitored.

Each of these frameworks has several elements. Whilst most of the elements are in place, some are still to be fully implemented, such as full staffing flexibility in the people framework.

DIMENSIONS OF SOF'S REFORMS

The School Charter

As part of the Accountability Framework, the School Charter is the official document produced by the school and the school council in collaboration with the school community. It is considered the major accountability agreement between a school and its community for the achievements of its students, on the one hand, and the school and the Department of Education (DOE), on the other. Each school develops its own charter which outlines how the school intends to deliver quality education to its students using the resources available in its global budget (the resources allocated to it by the DOE).

Through the Charter, school communities have the opportunity to determine the future character, ethos and goals of the school. Figure 2 shows the process by which the School Charter is developed.

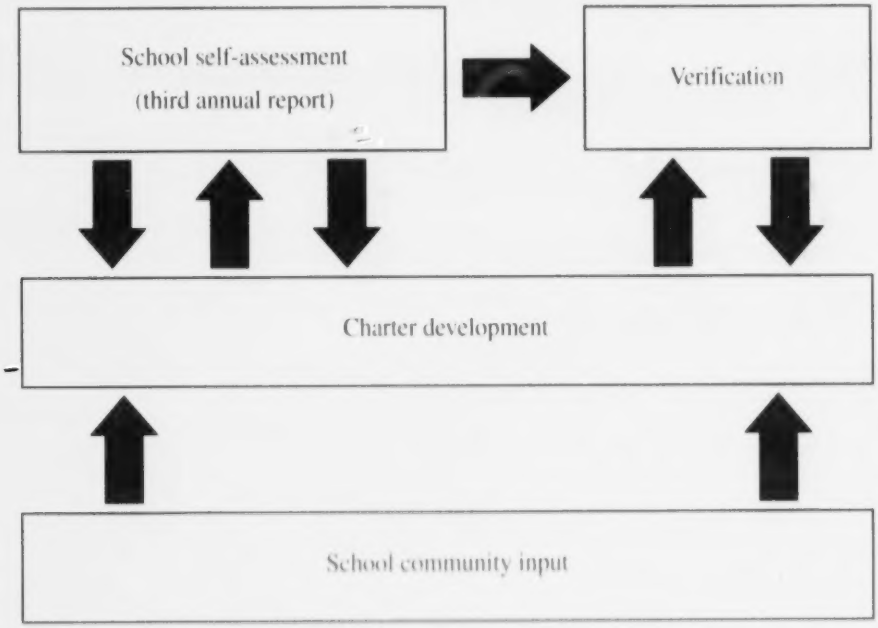

FIGURE 2. The process of charter development.

The document of the charter includes: the curriculum profile, codes of practice, students' code of conduct, accountability, budget summary and an agreement to ensure that schools meet their objectives within the limits of available resources. In particular, the document gives:

- A description of the school's philosophy and future directions.
- The school's goals and priorities that are identified as requiring further development.
- How the school intends to deliver the eight mandated curriculum areas and any other special enrichment activities specific to that school.
- Codes of practice for school council members, principals and staff.
- A code of conduct and the discipline approach used for students of the school.
- Details of the processes used for monitoring and reporting on student performance.
- A prediction of student numbers and an indicative budget for the period of the charter.
- A statement that the school agrees to operate within the terms of the charter and to agree to take all reasonable steps to ensure the school meets its goals within the available resources.

The school charter sets the strategic directions for three years. It provides the basis for detailed action plans and allows for the identification of performance measures in meeting the goals and priorities, which relate to curriculum, school environment, management, resource allocation and monitoring performance. Each goal is accompanied by indicators, which enable the achievement of that goal to be measured. The priorities are based on planned and continuous improvement. This places demands on the school to analyse its performance and, using the results of this analysis, to generate priorities for improved student performance. Schools report annually to the DOE and their local community on their performance in achieving their goals and priorities. Every three years a review is conducted at the school, in conjunction with the Office of School Review, to assist with the development of a new charter.

The school charter model adopted in Victoria has a number of features that place it in the category of the world's best practices. First, there is explicit detail concerning the areas identified for improvement and the goals that drive the school; it is not a document that focuses only on improvement, but includes details about the normal operation of the school. Secondly, it is student centred with explicit acknowledgement of the central importance of curriculum and improved student learning. Measurement of both goal and priority outcomes are prominent features. Thirdly, the school charters are firmly located within a broad accountability framework that includes school review and school annual reports. Fourthly, there is detailed specification of the roles of the school community members and a profile of the school. Most importantly, as an accountability instrument, the charter gives parents, via the school council, greater say in the conduct of the school, and increases the requirement to account for the enterprise to the government. The Office of School Review can demand that charters are rewritten, and the objectives not attained in one year are carried over to the next.

CURRICULUM AND STANDARD FRAMEWORK

A second important feature of the SOF programme is the Curriculum and Standard Framework (CSF). This is one of the elements of the curriculum framework noted above. The Board of Studies developed the CSF. There are eight key learning areas in the framework: arts; English; languages other than English; mathematics; sciences; technology, studies of society and the environment; and health and physical education. These guide the development of the curriculum from preparatory year through to year 10. The framework contains two components: (a) the curriculum content in several different levels to be attained over eleven years of study, across the various strands of activity within the key learning areas; and (b) the learning outcomes for students for each of those levels.

The CSF incorporates both content and process standards. Student progress is assessed against the CSF in a programme of state-wide assessment, the Learning Assessment Project (LAP). The LAP assesses students in years 3 and 5, in English and mathematics annually, and in one other key learning area on a five-year cycle. CSF is a teacher assessment of student performance based upon agreed performance levels contained within the CSF documents. In addition, the state has introduced one more test: a state-wide testing of student performance through the Victorian Secondary Assessment Monitor (VSAM) at years 7 and 9.

The introduction of explicit standards by means of the CSF set a yardstick for teachers and the community, and made public what had been the professional concern of individual teachers and staff. The LAP reports to the parents took the locus of information control on student progress out of the teachers' hands. It gave parents 'objective' feedback on their children, gave the school feedback on their performance vis-à-vis other schools, and gave the whole system information on overall attainment. In other words, in government schools, the LAP results became another instrument of accountability when added to school charters.

At the same time, the Victorian Certificate of Education (VCE), which is a two-year (years 11 and 12) school completion certificate, was revised and re-accredited. The VCE provides a wide variety of subjects for students to enable them to undertake studies for either university entrance and/or employment. It contains a series of Common Assessment Tasks (CATs) to be completed by all students undertaking a particular subject to ensure common achievement measures across the system. Some CATs are assessed at the school and others through external examination, but a state-wide moderation system is used to ensure parity for all students' work. All students involved in the VCE are required to sit a General Achievement Test (GAT) to check on the distribution of student grades for school-based CATs within the certificate. Should the school's VCE performance fall within the tolerance range of that school's performance on the GAT, then the results for the VCE assessment will be confirmed. If not, the VCE results will be externally reviewed.

SYSTEMATIC AND LOCAL ACCOUNTABILITY

The third feature of the 'Schools of the Future' Programme (SOF), which is part of the accountability framework, is the systematic and local accountability processes. These are presented in Figure 3. According to this system, the Board of Studies provides curriculum leadership and assistance to schools on a state-wide basis, while the Office of School Review supports the attempts of individual schools to raise the quality of their teaching and learning. The Board is responsible for course development and accreditation, course evaluation and assessment of student performance (including school completion and certification). The Office of School Review is responsible for the co-ordination and management of the accountability processes, particularly as they relate to the development and review of school charters.

As for local or school level accountability, the school councils have the authority to determine the educational policies of the school within the framework of the School Charter. The councils are responsible for maintaining the school premises and grounds, employing non-teaching staff and contracting the services of teachers for particular projects. They are accountable to their local communities, to whom they report through the annual report, and to the Department of Education (DOE), through which independent auditors ensure that the financial

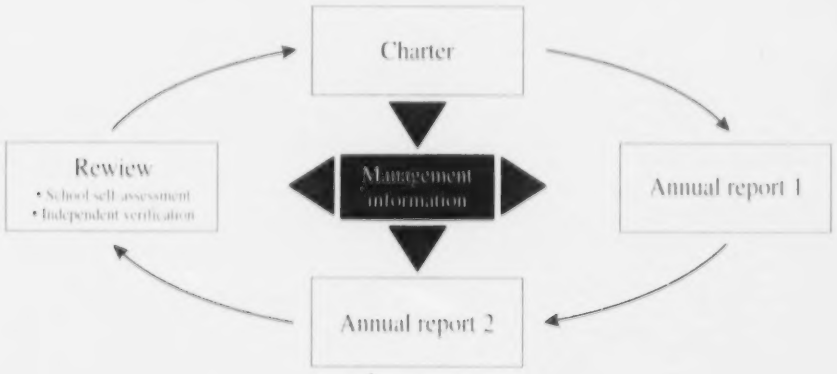

FIGURE 3. Systematic and local accountability framework.

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dealings of the school conform to the appropriate guidelines.[2]

These elements of the accountability framework serve two main purposes: they satisfy the 'legitimate expectations of government about accountability for the outcomes of schooling', and assist 'schools and teachers to improve standards of student learning'. The framework allows schools to monitor and report on their effectiveness and focus upon improving it. It provides an integrated planning, development and reporting package in which schools develop their own educational plans and priorities within government guidelines (through the school charter), and monitor the progress in meeting these objectives (through annual reports and a school self-assessment). The school's self-assessment is externally monitored through the verification phase of the school review component of the framework. The school charter, annual reports, self-assessment and independent verification are public documents, which are available for community inspection at the school level. The DOE does not allow public access to the accountability documents from schools; this has to be accessed through the schools directly.

SCHOOL REVIEW

This is an element of the accountability framework. School review, as shown in Figure 4, is a triennial review based on self-assessment by the school and an independent external verification leading to the development of a new school charter. Community consultation is encouraged at all stages of the process with many schools utilising significant community input in the development of the school self-assessment, including community representation on the verification panel and community involvement in the final development of the new charter. There are three annual reports indicated. Most schools complete two annual reports, with the school self-assessment doubling as both the summary of achievement over three years and the third annual report.

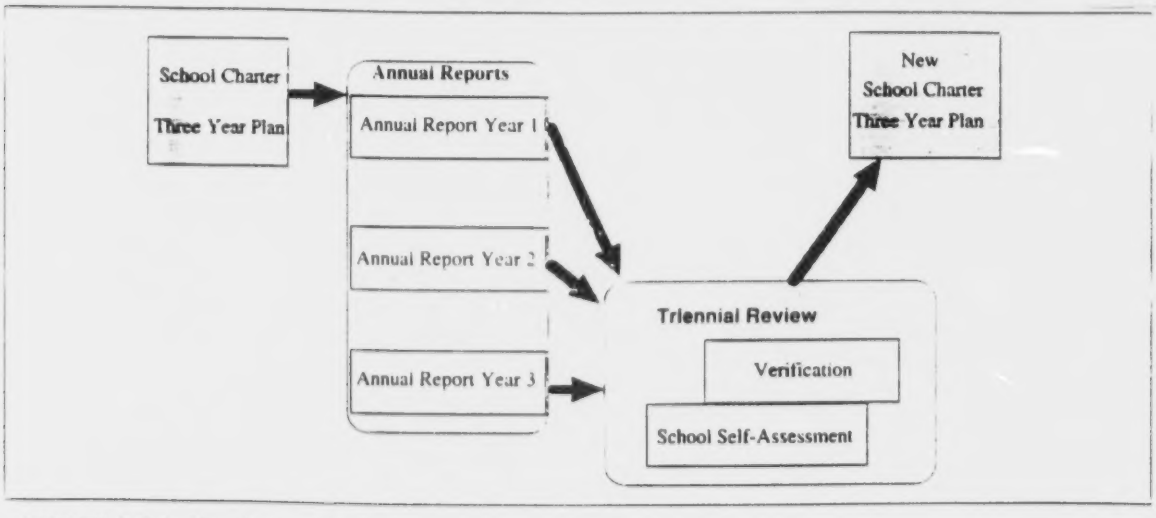

FIGURE 4: School review.

SCHOOL SELF-ASSESSMENT

The school self-assessment forms the summary document of the performance of the school over the three-year span of the charter. It is this document that is used in the verification process. It is the school that constructs this document, albeit on the framework provided by the government. It is not until the verification process that external review of this data is conducted.

There are detailed guidelines as to how schools interpret data for self-assessment, as compared to the annual report. Schools are required to present and interpret the data, make judgements and recommendations. The recommendations are focused upon the school's goals and priorities for the next charter. In constructing the self-assessment, schools are encouraged to involve their school community, although the extent of involvement varies. Some schools utilize consultants to help facilitate the process and/or the analysis.

[2] Both the LAP and the GAT assessment noted earlier are also used as part of the accountability framework.

VERIFICATION

An external verifier contracted by the DOE conducts the verification of the school self-assessment. The verification process has been constructed to be both affirming and challenging. It is affirming in that the work of the school and the progress made over the past three years is acknowledged and celebrated. It is challenging in that the process leads to the setting of new goals, priorities and improvements that may take place over the next three years. The verifier acts as a critical friend working with the school and taking a fresh look at the analysis of the school data to ensure that the school self-assessment is supported by the data presented, highlighting achievements, noting areas that can be improved or those that have been overlooked, and setting the planning and improvement agenda for the next three years.

The verification is conducted over one school day, with the verifier typically meeting with the principal, school council president, and one or more teachers. At the conclusion of the meeting the verifier prepares a

report which is forwarded to the principal for consultation before the principal, school council president and verifier sign the document. A copy of the document is then sent to the central administration. The end result of the process is that there is a set of firm recommendations on the goals, priorities and improvement focuses to be included in the next charter. The school is in considerable control of the process through its writing of the school self-assessment and has wide representation on the verification panel, not to mention the school principal chairing the verification day.

GLOBAL BUDGETS

The resource framework represents a significant feature of the SOF. Through this framework, the reform has implemented a new basis for funding government schools in Victoria through a well-developed School Global Budget (SGB). The SGB is primarily a formula-based funding model, which consists of a base element for all schools, together with an equity element based on the characteristics of the students enrolled. Hence, individual schools would have the flexibility to allocate all resources in accordance with local needs. Each school receives an SGB, most of which is made on a per student funding basis to reflect the different resource requirements across a range of variables related to learning needs. It provides funding for all school-based costs, including staff salaries, operating expenses and school maintenance.

Schools received support in the introduction of local budgets through increased funding for administrative support and with a software package called 'Computerized Administrative Systems Environment for Schools' (CASES). This assisted the schools to monitor their financial, personnel and administrative functions. Devolving financial management to the local level aimed to empower principals and schools councils to set and allocate resources for local priorities, to separate the purchase of education from its provision, and to decrease the need for a central bureaucracy.

The SGB has its counterpart in other places where there is a high level of school-based budgeting. In every instance, the task of determining the basis for allocation has proved difficult for a range of reasons, including the absence of information about allocations in the past and debate about the relative weightings to be given to the different factors to reflect learning needs.

In 1994 (and again in 1995), an Education Committee was called by the then Minister of Education to advise him on a mechanism by which the DOE could allocate 90% of its state's budget to schools. Most of the committee's recommendations in 1994 and 1995 were implemented. These included a per capita core funding supplemented by needs-based allocations for students at educational risk, students with disabilities and impairments, rurality and isolation, students from non-English speaking backgrounds, and priority programmes. The principles underlining these recommendations were detailed as follows:

Pre-eminence of educational considerations. This principle implies that determining what factors ought to be included in the construction of the School Global Budget and what ought to be their relative weighting are pre-eminently educational considerations.

Fairness. This principle implies that schools with the same mix of learning needs should receive the same total of resources in the School Global Budget. In accordance with this principle, SGB should redress the unfair historical allocation of resources, which involved some schools receiving more resources and others receiving fewer resources, when they were otherwise comparable.

Transparency. This principle implies that educational validity and the fairness of the SGB will be apparent only to the extent that the basis for allocations in the SGB is transparent—that is, it is clear and readily understandable by all those concerned. The basis for the allocation of resources to each and every school should be made public.

Subsidiarity. Subsidiarity is the principle that a decision should only be made centrally if it cannot be made locally. It describes the principle of maximizing funds available for school-based decision-making. An implication for the construction of the SGB is that the starting point is to consider included all items of expenditure related to the operation of school. A case must then be made to exclude an item from the SGB. Exclusion of items from the SGB may take place if—and only if: (a) schools do not have control over the expenditure for that item; (b) there is excessive variation in expenditure for the item at the school level from one year to the next; (c) there is unpredictability in expenditure for the item at the school level; (d) expenditure is of a once-off nature; or (e) the item is one for which the school acts simply as a payment conduit.

Accountability. Accountability is a necessary counterpart of the educational focus in the SGB, given that the latter is concerned with matching resources to learning needs. A school which receives resources because it has students with a certain mix of learning needs has the responsibility of providing programmes to meet those needs, and should be accountable for the use of those resources, including outcomes in relation to learning needs.

Strategic implementation. When new funding arrangements are indicated, they should be implemented progressively over several years to eliminate dramatic changes in the funding levels of schools from one year to another.

When implemented in 1995, the SGB consisted of six elements, as follows:

Core funding (based on current staffing and grants formulae with additional funding for administrative support for small schools and early childhood years P–2. This amounted to 80% of the total budget).

1. Additional funding depending on the isolation and rurality (IAR) of schools (depending on the size of the school, and its isolation factor) so as to ensure adequate staffing and a range of curricula in these schools.

2. Additional funding for students from non-English-speaking backgrounds.
3. Additional funding for students with disabilities and impairments (DAI).
4. Additional funding for students at educational risk (SAER).
5. Additional funding for priority programmes such as: physical and sports education; science and technology; instrumental music; professional development; arts in Australia.

USE OF MANAGEMENT INFORMATION SYSTEMS AND TECHNOLOGY

Another important dimension of the SOF is its extensive use of technology and computerized information systems. At the administrative level, and as noted above, CASES was introduced to assist schools to monitor their financial, personnel and administrative functions. This allowed the schools to interface with the central computer system. Schools were issued a standardized computer hardware and software system. CASES stores and processes a range of data including student records (often from teacher input), and financial, physical and human resource data. To enhance the value of information recorded and maintained in CASES, another type of software was designed. This is the CASES Management Information System (CMIS), which is an 'add-on' software package to make better sense of CASES for management purposes. It provides a range of summary reports, often presented graphically, which have been developed in consultation with schools and central personnel. Both CASES and CMIS programmes have been developed in-house by the DOE.

To enhance the system by extending it to include student records, a third software application was introduced. This is a commercial product adapted to Victoria's requirements. The product known as Kidmap provides student assessment and recording, analysis and profiling of student progress/needs, preparation of reports for parents, and access to teaching resources. It allows schools and school systems to access student data, and to analyze and interpret this in a variety of ways.

At the central office and regions, the DOE introduced an Education Management Information System (EMIS), which has some linkages to the CASES/CMIS environment. The basic system in EMIS is the Corporate Information System (CIS) which contains basic school profiles, a diary of events, a phone directory and a range of documents. EMIS also includes a decision support system (DSS) which contains the same databases as CIS, but with additional features. These features provide additional information to allow the construction of an individual school's profile. They also allow the provision of a range of statistical information for downloading to a spreadsheet/word-processing package.

The interface between these information management systems is shown diagrammatically in Figure 5. The figure illustrates the main channels of communications and the users of these channels in the SOF management information system. For both the annual report and school review elements, the processes are informed by an extensive array of school and system generated data on student and school achievement. This very much facilitates the collection and analysis of data used in the operation of the accountability framework, and the day-to-day operations of the school.

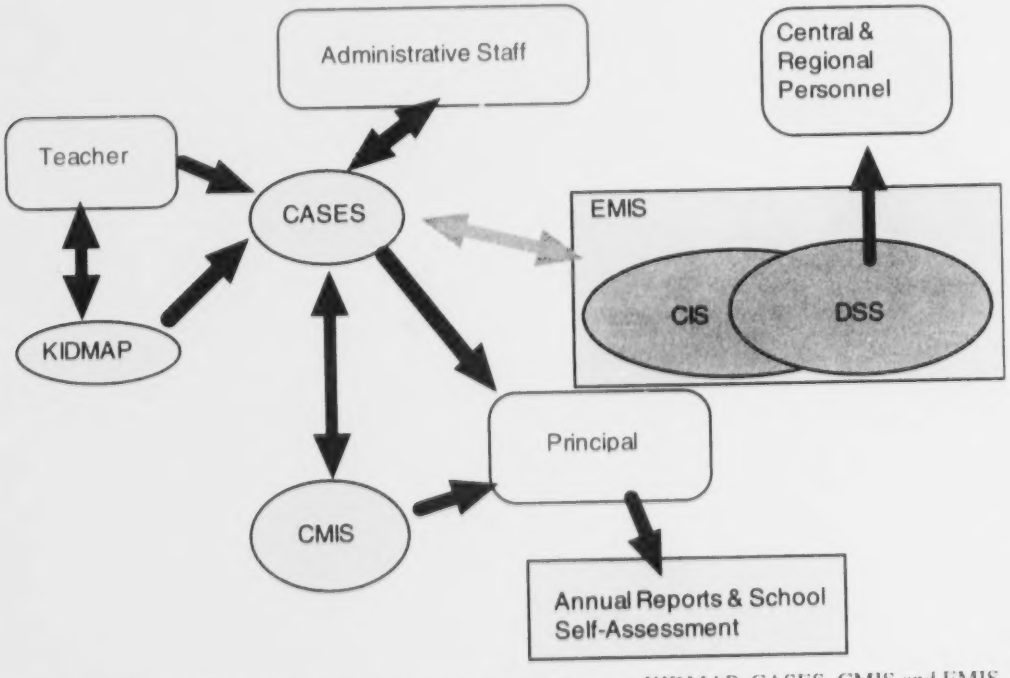

FIGURE 5. Department of Education Management Information System: KIDMAP, CASES, CMIS and EMIS.

In terms of curriculum delivery, several curriculum programmes, which make an extensive use of technology, were also introduced. An Interactive Satellite Television (ISTV) programme was established in 1994. Both government and non-government schools installed satellite dishes to receive centrally produced programmes. Students could interact directly with the programmes' presenters using either a fax or a telephone. Professional development programmes for teachers and general access for other community groups were also made available through this new technology. Other technological initiatives in the curriculum included programmes which gave all schools access to the Internet and opportunities to develop methods of using the new technologies; and brought people from education and the entertainment arena to work together to develop computer software that both educates and entertains.

PROFESSIONAL DEVELOPMENT AND SUPPORT

As part of the people framework, the career structures of principals and teachers were addressed. This was 'consistent with efforts to restructure the public sector', where 'there has been downsizing of central and regional agencies, with a small but powerful strategic core "steering" the system'. In this framework, staff selection was devolved to the local level and professional development was provided to build capacity in principals for their expanded roles, as well as to give teachers the skill to implement curriculum improvements. However, the school's personnel for the most part remain centrally employed. At the same time, schools were given an increasing capacity to select staff and determine the mix of professional, paraprofessional and support arrangements.

All of the restructuring noted above required considerable commitment from the central office to provide professional development for all school personnel: principals, teachers and school councillors. At the time of their entry into the SOF programme, schools had an induction period of six months to ensure that they were ready for their new responsibilities. Professional development for principals included issues related to the global budget, leadership and management. Administrative staff were given training to improve their understanding of the new computer system and the global budgeting process, including the management of personnel. Teachers were given training in programmes related to curriculum leadership in response to school charters. School councillors were given training to help understand the process of charter development, and the implementation of the SOF programme.

At the central and regional level, special positions were created to deal with local concerns. These positions, known as the District Liaison Principals (DLP) were placed in regions across the state. Two positions were placed in the central office. The role of the DLP was to act as a change agent, providing advice and assistance to principals, assisting with professional development, and ensuring that schools have access to student services and curriculum support staff. In addition, a small number of support staff were located in each region.

Support for principals and teachers is an on-going activity. Areas of support include leadership training, mentoring and coaching, with experienced principals supporting junior ones. These have helped to establish the longer-term future of leadership in schools. The Professional Recognition Programme (PRP) offered teachers the capacity to opt into a system of enhanced pay and career structure, including annual appraisal. The main aims of the programme are:

- To provide a working environment that encourages and rewards skilled and dedicated teachers;
- To encourage the further development of an ethos that values excellence and high standards of achievement; and
- To provide formal feedback on a teacher's performance so that appropriate career development may occur through professional development and other means.

To achieve these goals, the DOE allocated in 1995, the total of A$240 per teacher in each school for professional development. This meant that appraisal could support improvement and provide the basis for promotions based on merit rather than seniority. Local staff selection, appraisal and professional development gave the school greater control over their human resources and greater flexibility in responding to local needs.

AN EVALUATION OF SOF REFORM

The SOF reform has devolved considerable authority and responsibility to the school level. Important features of its success include:

- The framework presents an integrated programme that works at two levels: for school planning and development and for system accountability. It is this dual utility that has been the key to success. Schools value the framework for providing them with a valuable developmental tool. Inspection programmes, such as those used in the United Kingdom, do not offer the same degree of support to schools as that offered by the accountability framework.
- The framework has been supported by the development of a range of performance measures. Some have been developed especially for the framework (staff and parent opinion surveys), whilst others have been developed as part of other elements of the reform (e.g. CSF). Importantly, benchmarks of performance have been created which allow schools to assess their performance against those of both the state average and schools, which have a similar student population.
- The development of the performance measures has been supported by the development of software to facilitate the display and analysis of the data.

This process has provided schools with the tools to monitor performance, a quality assurance framework within which to operate, and a quality control process that meets systemic requirements. In essence, the accountability framework includes the benefits of a supervisor model of school supervision, with an explicit and extensive programme of support for school planning and development.

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Appropriate levels of professional development have been used to support the framework implementation. Extensive consultation and trialling occurred in the development of the school charter, the annual report and the triennial review. The Office of School Review also consulted widely with experts throughout the world, and its personnel have been active in gaining experience of best practice. The independence of the Office of School Review from the schools section has enabled it to develop the accountability framework without the constraints that it might have been subject to had it been part of the bureaucratic structure of the Office of Schools.

At the early stages of SOF inception, the DSE published 'The schools of the future information kit' and 'Schools of the future guidelines for developing a schools charter' to assist all schools in their transition to SBM. The documents reinforced the trend for principals to be recognized as true leaders of their schools and to be expected to build and lead their teaching teams by clarifying important responsibilities which are determined at the school level. The unique character of each school and community is reflected in distinctive curricula selected from a broad range of studies established by Victoria's Board of Studies. So as to achieve the overall aim of providing quality education for every student, enabling each to realize his/her full potential, different approaches to learning and teaching are encouraged to optimize the advantages gained from technological progress. The school charter, developed within the guidelines of the DSE/DOE, encapsulates the school's vision and establishes a framework for the allocation of resources. The crucial element for the success of the school would seem to be its ability to respond to the needs of the community and to provide a service which sustains an on-going demand for places within the school, as well as a boost to the employment potential of its graduates.

However, there remain considerable constraints on schools. For example, the leadership role of a principal of a SOF is a demanding one. The tasks carry onerous responsibilities, both 'upwards' to the DOE and the Minister of Education, as well as 'outwards' through the members of the School Council to staff, students, parents and the community.

Moreover, there is evidence of increased teacher workload and time demands, concern over the level of resources, increased reliance on local fund-raising, including the collection of fees, teacher disempowerment and a decrease in school diversity. There is also frustration at the inability of parts of the reform to be fully implemented, especially the promise of school control over staffing and the implementation of the principal performance management plan.

Concern has been expressed that reforms to bring about the decentralization of authority in the current education system are cost-cutting measures, rather than a means of improving school effectiveness. As a matter of fact, this phenomenon of cutting-costs and reducing staff has been a feature of most SBM reforms worldwide.

On the other hand, the new arrangements of decision-making and the increased community involvement give a clear impression that education is a partnership between the staff and the parents. However, much of this seems to have been undermined in favour of more power being given to the principal.

Non-school science education: a case study from France

Jean-Marie Sani

Introduction

This article attempts to show how a non-school educational institution can be a valuable resource for complementing school-based education, and how it can be a place of innovation and experiment.

A typology of science museums

It is possible to place science museums into three categories, which have developed over time:

Collection museums are the most traditional—the museum is based on a collection. A principal disadvantage of such museums is the separation of the visitor from the objects on display. Direct contact and manipulation of real objects have obvious advantages over the simple viewing of artefacts.

Demonstration museums. In the second type of museum, demonstration of facts and mechanisms—'how things work'—is very important. The origins of this type of museum can be found in the eighteenth century, but they are more closely related to universal exhibitions organized in many large cities during the nineteenth century.

Interactive exhibits. The third and most recent category is a type of museum where the emphasis is placed on possibilities for direct interaction between the visitor and the exhibition. Different types of information may be obtained depending on the actions performed on an object by different visitors, who will, in turn, react differently to the results of their actions. Computers may serve as an excellent tool for organizing such interactivity between visitors and exhibitions.

The majority of modern science museums are a combination of these three types. Examples are the Exploratorium in San Francisco, United States of America and the *Cité des Sciences et de l'Industrie*, France.

The Cité des Sciences et de l'Industrie

The main purposes of the *Cité* are:

- to provide visitors with scientific, technological and industrial knowledge and know-how on phenomena and issues affecting their daily lives;
- to provide a forum for debate on current developments in science and technology;
- to operate as a resource centre which relays information from various partner institutions for the benefit of visitors (such as the service provided by the 'Cité des métiers');
- to be a centre for innovation in the fields of communication, education and training in science and technology issues, in partnership with institutions operating in these fields.

Its services consist of:

Exhibitions. These are the most important resources: different exhibitions (permanent or temporary) whose aim is to help visitors understand the effects of the development of science and technology on human life. They combine possibilities for observation, demonstration and hands-on interaction by visitors.

'Explora'. This is the main exhibition: 30,000 square metres on subjects as varied as the environment, communication, health, astronomy, energy, sounds and space.

'Cité des Enfants'. This comprises two permanent exhibitions, for 3- to 5-year-olds, and 5- to 12-year-olds. The subjects include machines, communication, the human body and other aspects of biology. There is also a temporary exhibition on the topic of electricity.

'Techno Cité' is a particular exhibition on technology, intended for teenagers, where the visitors can have real contact with diverse objects, and where teamwork is very important. The exhibition is organized in five sections and each one can be reserved for a class of pupils for ninety-minute sessions.

Its resources are as follows:

'Médiathèque'. This is a multimedia public library with 300,000 books, 3,000 films and a variety of computer software. It offers an excellent complement to the exhibitions.

'Salle science-actualités'. This exhibition is a presentation of current developments in science and technology, assembled by a team of journalists. It is renewed monthly.

'Cité des métiers'. This service space is organized in collaboration with external institutions, where visitors can obtain information on career orientation, vocational education, training, and employment. There is a strong emphasis on the evolution of the job market according to the development of science and technology.

Entertainment theatres. Different places of entertainment complete the complex. These include: (a) the 'Géode': a hemispheric cinema theatre; (b) the

'Planétarium'; and (c) the 'Cinaxe': a dynamic cinema theatre in which the room moves alongside the film.

These places receive from 3.5 to 4 million visitors a year.

The educational policy of the 'Cité'

Support to teachers: A variety of suggestions are provided to teachers relating to projects they may wish to carry out with their classes. These are merely suggestions—not directives—and teachers are free to select their own projects. The orientation and documentation services of the *Cité* are available to schools in support of educational projects. The *Cité*'s resources facilitate the development of both the content and process of projects:

- *content:* work on transversal topics which demonstrate the effects of science and technology on society (daily life, professional life, society's choices, economy);
- *process:* access to the diverse media available at the *Cité* in order to learn how to exploit them effectively to answer questions posed by educational staff at the museum.

A multidisciplinary approach: All the themes proposed by the *Cité* to classes or teachers are multidisciplinary. This is recognized as a good approach in education, and a necessity for a holistic view of the impact of science and technology on society. To carry out multidisciplinary projects teachers have to:

- use resources which are themselves organized in a multidisciplinary way;
- favour connections between scientific and technological subjects through transversal topics;
- favour treatment of topics using scientific, technological, industrial, social and economic perspectives;
- illustrate the large social debates generated by the evolution of science and technology.

The organization of the educational projects

In the museum, school classes can carry out activities that they are unable to do in the school. On the other hand, there are certain important activities that must take place in the school. Thus, the teacher has to use the educational project method, covering a certain time frame, and incorporating activities scheduled before, during and after the visit:

Before the visit. The activities include:

- work on the topic and emergence of a set of questions, originating in the pupils' existing conceptions;
- organization of the project material, budget, transportation and timing. Prior to visiting the museum, pupils know that the visit's aim is to collect information on a particular topic.

During the visit. Activities will include:

- resolving the original question/problem;
- acquisition of methodological tools;
- collection of information in terms of knowledge and know-how;

writing up a brief synthesis;

extending the topic to related subjects that appear relevant during synthesis.

After the visit. In this last phase the following activities are important:

- sharing of acquired information;
- organization and reformulating of the information, for instance in the form of a report, school newspaper or exhibition;
- complementary research, using other resource centres (libraries, museums, factories).

It is very important to involve the pupils in a variety of activities. An example of a possible sequence is as follows:

- determine a research subject;
- identify the pupils' preconceived ideas;
- prepare a set of questions;
- apply a research method, starting from the set of questions;
- evaluate the new knowledge that has been acquired;
- measure the evolution of the pupils' knowledge compared to the initial subject.

This sequence may be adapted to the pupils' level of ability, providing for individualized progression.

The role of the teacher

In this type of environment, and in such a didactic relationship, the teacher has a precise role to play. This role is, of course, often evident in the school, but it is probably needed more in a place like the *Cité*. The teacher's role is not to deliver ready-made information to the pupils, but to orient and guide them in the process of structured research, giving them the opportunity to ask their own questions, develop problem-solving techniques, make their own discoveries, and arrive at carefully thought-out conclusions based on scientific evidence. The teacher should help pupils to: formulate questions; organize their research; critically analyze and summarize the results; and formulate new questions based on the outcomes. The teacher must also evaluate the final results.

Conclusion

The role of the staff at the *Cité* is to assist teachers in exploiting the museum's resources to the best advantage in the realization of class projects. The most effective approach is a collaborative transdisciplinary project, with several teachers from different disciplines working as a team, and with activities carefully planned before, during and after the visit.

Present policy priorities

Beyond to the *Cité*'s general and long-term objectives, specific short- or medium-term objectives are formulated (covering a year to several years). These presently include:

- the development of experimental activities;
- the use of information and communication technologies (ICTs) in education;
- work with disadvantaged publics in a strategy of partnership;
- focus on a multidisciplinary and systemic approach;
- provision of information and developing knowledge about training, jobs and careers, and vocational education;
- focus on lifelong learning;

- promotion of international development, especially in the field of science and language projects.

The role the Cité would like to play in the formal educational system

The *Cité* provides a place where teachers may practise innovation in science and technology education, with the help of tools, training and documentation. It aims to make available to teachers and pupils quality information on the latest developments in science and technology as they relate to the scientific and the industrial communities. The ultimate objective is to foster the introduction of new practices and methods in the whole education system. The museum's close relationship with the formal education system allows it to be a laboratory and place of innovation for new educational practices. A similar role may be played by diverse non-school learning institutions in all countries: museums, libraries, industries, research institutes, art exhibitions. The development of partnerships between the school and non-school learning institutions opens up a wealth of exciting possibilities for innovation and change in the organization and practice of education.

PART IV:

CURRENT TRENDS IN THE ADAPTATION OF EDUCATIONAL CONTENT IN SOUTH AND SOUTH-EAST ASIA

Who should be doing what in adapting the curriculum? The roles of various protagonists with particular focus on policy-makers, curriculum developers and teachers

Udo Bude

1. CURRICULUM DEVELOPMENT: THE PROBLEM OF 'SEMANTICS'

The idea of curriculum development has, over recent decades, become firmly established in education systems throughout the world. It took much longer, however, for us to realize that curriculum development is not simply a one-time event during which there was an emphasis on providing training in techniques and skills in order to establish and organize national curricula. For educationalists and practitioners alike, curriculum development is now regarded as an on-going process, with the declared objective being to organize better learning opportunities, and thus focusing on actual interactions at the classroom level.

Continuous efforts to translate educational goals into activities, materials and observable behavioural changes are indicative of the present trend. Learning, teaching and assessment are inextricably linked—it is only in the context of the others that each has a meaning. Without learning, assessment has relatively little value, without assessment, the effectiveness of learning and the accountability of teaching cannot be determined.

Societies advancing into the twenty-first century face the major challenge of developing an open, active, flexible and intercultural curriculum. No longer can a central authority prescribe one curriculum for all primary or secondary schools in a country. What is now required is specific curricula based on a national core curriculum, allowing for local variations and regional diversification according to different ecological and cultural circumstances and learning needs—with the active involvement of all those concerned.

Although the curriculum is generally considered essential and fundamental to the educational process, one quickly discovers that there is no general consensus about the meaning of the term. 'Curriculum' has been defined in different ways by different people in different places. It is meaningless to look for 'right' or 'wrong' definitions. In reality, its meaning seems to be a matter of culture, environment and practicality.

The worldwide application of the term 'curriculum' in the process of organizing education is still a recent phenomenon. In most European languages, one will not find an equivalent to the English term 'curriculum'. The French speak of the *programme scolaire*; the Germans of the *Lehrplan*. However, these terms correspond more to the narrow definition of curriculum indicated in English by the term 'syllabus' (theory of instruction programmes). Analyzing the Latin roots of the term, one finds that it derives from *currere*, meaning 'to run a race course'. This can be translated roughly into educational terms as 'to run a course of subject matters/studies'.

Thus, within the process of globalizing the term 'curriculum', some educators use the term to mean the content or objectives that the schools intend students to learn, while others focus on the means of education—the teaching strategies schools plan to use—that constitute the curriculum. Other educationalists claim that neither the intended learning nor the plans for bringing it about are as important as the actual implementation and learning achievements, which account for the real meaning of the curriculum.

Viewing 'curriculum' in a broader, process-oriented perspective, we may conclude that: **The curriculum is an organized set of intentions, that articulates the relationships among its different elements (objectives, contents, evaluation, etc.), integrating them into a coherent whole. It consists of a continuous chain of activities necessary for translating educational goals into concrete learning opportunities.**

Curriculum development is thus a complicated, dynamic and continuous process. Society is constantly changing. So too do the learners, the teachers and the subjects taught. The curriculum must be responsive to these changing conditions in order to equip the learner to both cope with and contribute to future societal developments. **A permanent search for qualitative improvement, in response to changes in society, is what curriculum development is all about.**

2. APPROACHES TO CURRICULUM DEVELOPMENT AND THE PARTICIPATION OF STAKEHOLDERS

In most countries, the curriculum for primary or secondary schools is planned at a higher level of authority than that of the classroom. Teachers are regarded as conveyors of the curriculum and are expected to implement the planned curriculum 'to the letter'.

Since it is not possible to teach all knowledge, skills and attitudes, every curriculum consists of selections from the possible range of content that could be taught.

Similarly, the teaching methods proposed are also just a sample of the many methods that could possibly be used for teaching that content. The approaches to developing curricula are largely determined by the beliefs and assumptions of those who are actively involved—their philosophy of education or their theoretical perspective. Although some perspectives claim to be 'objective' and 'value-free', in actual fact, no curriculum development can be solely technical.

In a democratic society, the participation of different stakeholders in curriculum development is a fundamental ingredient in the organization of the educational process. However, curriculum development is often not carried out in a systematic way and does not provide regular opportunities for different groups to contribute actively; on the contrary, changes often come about as a reaction to problems or an emergency situation in education or in the larger society.

In such cases, politicians very often react by using the 'panic approach' towards curriculum development, whereby curriculum developers are forced to act as technicians, introducing hastily developed modifications in the curricula. Youth unrest or the boycott of classes by students, for example, are typically counteracted at the political level by demands to change the curriculum and include more teaching on moral values. This neglects the hard facts that young people may be facing a very insecure future on the job market because the curriculum is out of touch with economic reality. In the same way, small groups of 'experts' may impose curricular changes and insist on the introduction of 'fashionable' topics—in many cases, just adding to the burden of an already overloaded curriculum.

A characteristic of the panic approach to curriculum development is the lack of analysis of related situations, with the result that the approach adopted is often piecemeal in nature. As a result, this approach tends to create more problems than it solves.

Curriculum development needs to be carried out in a systematic way, starting with an analysis of prevailing situations (situational analysis). From the very beginning, the main stakeholders have to be involved. This helps to develop realistic procedures, to anticipate problems and to suggest possible solutions. However, only a 'systematic approach' to curriculum development, providing sufficient opportunities for participation by all stakeholders, also enhances the chances of implementing the curriculum changes at the classroom level.

3. FOCUS ON POLICY-MAKERS, CURRICULUM DEVELOPERS AND TEACHERS

3.1 From the heights of theory to the daily business of classroom instruction—national versus school-based curriculum development

Notions of curriculum development differ according to educational theories and practices. Some refer to preparing a plan of operation based on an existing syllabus (including the development or selection of textbooks, teacher's guides and other instructional materials). Others regard curriculum development as producing a syllabus and all the accompanying materials needed for teaching/learning in the classroom, and eventually also evaluation instruments for examining the attainment of the programme goals.

Some educationists distinguish between 'local-user development' and 'external development'. Connelly (1991), for example, argues 'that, in theory, a curriculum can be fully developed either by the users or by external developers, although such cases rarely occur in practice' (A. Lewy, *National and school-based curriculum development*, Paris, UNESCO:IIEP, 1991, p. 29).

It seems, however, that in practice only a minority of 'users' will actively take part in the curriculum development process, while most people are happy to take advantage of those curriculum components developed by the 'external developers' (curriculum specialists, publishers, etc.). 'Intelligent teacher-consumers, skilled in the art of selection, will choose the materials they judge suitable, and will alter, augment, process, and transform them to suit their classes' (Lewy, ibid., p. 31).

There is ample evidence for caution about the enthusiasm of teachers for curriculum development. Teachers often tend to be conservative and to resist change. In many instances, they are reluctant to experiment with new ideas concerning the curriculum, especially if they do not have a sufficient level of professional training and there is no precedent of their involvement in educational reforms. Nevertheless, teachers will definitely be the most active partners in the curriculum as regards implementation. Even when the scope of their activities may be limited—and this is a quite controversial point of view—their active involvement in curriculum development constitutes a fundamental contribution to the ownership of curricula and the quality of education.

Curriculum development not only takes place at the national level, involving policy-makers, curriculum developers—and some teachers. To a smaller or larger degree, every teacher is also involved in curriculum development at the school level. This fact has been highlighted and elaborated in recent years under the term 'school-based' curriculum development. There are still countries where the nationally prescribed curriculum—especially the schemes of work and textbooks—expects all teachers at the same level to teach the same topics of a subject on the same day of the school year, using the same methods and instructional materials.

The majority of countries, however, tend to provide only a national framework and encourage and foster curriculum development activities at regional, local and school level. This involves different forms of curriculum development initiatives, ranging from selecting and adapting curriculum components according to local circumstances and resources to producing lesson units and instructional materials. Depending on the definition of curriculum development activities, the scope of school-based decisions about the curriculum varies across countries and across schools within a country, covering mostly from 10 to 30% of the total school curricula (Lewy, ibid., p. 36).

The greater the extent of decentralization in curriculum development, the more the participation of schools and teachers in such activities is required. At the same

time, such an approach gives practising teachers a chance to contribute as curriculum developers, if they are prepared to assume this professional task.

3.2 Who makes what choices in curriculum development? Clarifying levels of decisions and the actors involved

The degree and extent to which the different protagonists or stakeholders influence the components of curriculum development vary considerably. Choices are made at different levels of the education system, rarely by the same group of people. The closer curriculum development gets to the school level, however, the more teachers will be involved.

In order to have an idea of the complexity of choice and the reality of power-sharing, we have to clarify who makes what choices and how this influences the instructional practice at school level. The pattern of choice will vary from country to country, but it is easy to demonstrate that curriculum development is not just the business of policy-makers or curriculum specialists. Co-operation and sharing of power are needed among the different groups involved, including the important 'band of middlemen'—teacher trainers, inspectors, local administrators, etc. (See H. Hawes & D. Stephens, *Questions of quality—primary education and development*, London, Longman, 1990, p. 66–68).

For the purposes of analysis, the major actors and influences shaping curriculum decisions can be classified as internal and external forces. The internal forces are those legally responsible for curriculum policy and planning, and whose involvement in the curriculum development process is determined through some regular, structured arrangements. On the other hand, the external forces exist outside the government structures and the administrative bureaucracy of education systems. They can influence the curriculum development process through mainly irregular patterns of pressure politics and powers of persuasion. In practice, one will find that these categories of participants and influences in curriculum development overlap significantly.

4. PROVIDING 'LEARNING OPPORTUNITIES' IN THE CONTEXT OF A MEANINGFUL CURRICULUM

4.1 Curriculum implementation as the key element of the curriculum process—getting the curriculum to the 'users'

Despite the involvement of the main groups who have a stake in curriculum development, the official (planned, prescribed, intended) curriculum, being the result of the joint efforts of the actors involved, differs considerably from the actual organization and type of learning opportunities provided in schools. The prescribed curriculum normally reaches the schools and the teachers in a formal way—as general and pedagogical guidelines, and syllabuses for the different subjects.

However, the taught (implemented, actual, operational, in-use) curriculum is the result of the circumstances, conditions and possibilities affecting each individual school, especially the quality of the school's leadership and its staff. Why is the reality different from the officially planned situation?

In many instances, the official curriculum tends to ignore or neglect the reality of the classroom, particularly in terms of the skills, subject knowledge and motivation of the average teacher. Furthermore, the prevailing conditions in many schools are often not sufficiently considered (overcrowded classes, lack of basic materials and textbooks, etc.).

Successful curriculum implementation lies at the heart of the curriculum development process. It is a continuous process that assists teachers in improving their skills in classroom interaction, providing chances to interpret the official curriculum in the light of local conditions and in a practical way—for example, by developing lesson units within a given framework and trialling them in school.

Curriculum conferences can provide a platform for training workshops in the production of curriculum materials for schools. The main purpose of such conferences is the transformation of nationally or regionally planned curriculum guidelines into practical lesson units that reflect local conditions and concentrate on existing cultural and ecological traits. Educationalists from different levels of primary or secondary education jointly design lesson units for specific subjects for particular classes/standards. If educators learn how to translate curriculum guidelines into structured steps for teaching at the classroom level and develop learning opportunities that create chances for active student involvement, the prescribed core curriculum stands a better chance of actually being implemented.

Only if curriculum conferences are seen as on-going activities within the process of curriculum development can they contribute to empowering teachers, school inspectors, tutors and others involved in education at regional, district or local level. This is a realistic procedure for the curriculum to reach the 'users' and to improve the quality of education provided in schools.

4.2 Developing curricula for and with teachers to improve the quality of education

Without neglecting the importance of policy-makers and professional curriculum developers in the design and implementation of curricula in primary and secondary education, teachers still play the most crucial role, if we want to see curriculum reforms actually being practised in the schools. One can easily assess the curriculum situation in a school through the following questions:

- How closely does the taught (actual) curriculum follow the official (prescribed) curriculum?
- If there are large deviations, what are the reasons?
- Are there topics or areas of learning that are considered important for the students, but not included in the curriculum?
- Are there parts of the official curriculum not taught in school? What are the reasons for excluding them?
- Does the school offer extra-curricular activities? How and who determines the content? Is there any relationship to the official curriculum?

Although teachers may not have specialist knowledge in many subjects, as 'generalists' they are extremely knowledgeable about the pedagogical situation in schools, for example, about the learning environment, their students and their colleagues. Practising schoolteachers can contribute to curriculum development through their classroom experience, putting ideas and approaches into the true perspective of what works and what does not work. Teachers' roles may vary from describing and explaining the development level and abilities of the students they teach to proposing activities and resources that are feasible and available in their schools and communities. They can also be involved in developing or reviewing draft lesson units and materials based on their experiences, and on the matter of trialling or experimenting with newly developed curriculum materials, they are the essential partners in curriculum development.

The ultimate aim of curriculum development should be the improvement of the quality of education through the provision of guidance and assistance to classroom teachers. Effective curriculum materials have to be developed and implemented for and with the teachers. New curricula can only make an impact on the teaching/learning process if they provide guidance and support for using appropriate methods for teaching and assessment. **Teachers are in the ideal position to advise on the appropriateness, relevance and feasibility of curricula. Without consulting, involving and supporting teachers, curriculum reforms stand no chance of succeeding.**

'Schools and classrooms are where the work of policy-makers, planners, curriculum developers, teacher-training institutions and administrators comes together. If the reforms or policies do not make a difference within the classroom, of what value are they?' (A. Hartwell & E. Vargas-Baron, *Learning for all: policy dialogue for achieving educational quality*, Washington, DC, USAID, 1998. Paper presented to the International Working Group on Education, Munich, 23–26 June 1998, p. 22.)

An overview of country reports on curriculum development in South and South-East Asia

Isabel Byron

As developing nations, the thirteen South and South-East Asian countries which participated in the curriculum development course in New Delhi share many common concerns and problems. However, they also differ considerably in terms of their size and geographical situations, histories and cultures—not to mention levels of development. These individual characteristics will obviously affect the nature and state of development of national education systems and, by extension, the processes of curriculum design, implementation and renewal.

The reform and renewal of school curricula is clearly a priority for all the participating countries. They recognize this process as integral to the improvement of education. Many are presently implementing reforms—Bangladesh, Indonesia, Myanmar, Sri Lanka, Viet Nam—or are preparing for major curriculum change—Thailand, Maldives. Others are monitoring or evaluating the impact of recent reforms: Bhutan, Nepal, India, Philippines. Malaysia refers to its on-going process of curriculum reform and Pakistan to the tradition of four-year curriculum reform cycles.

The focus of reform in a number of countries has been on primary or basic level education (Bangladesh, Indonesia, India, Maldives, Thailand), although most countries are also attempting to improve the quality of secondary education, making it more relevant to the future needs of pupils and reducing an overly academic orientation.

KEY CONCERNS IN EDUCATIONAL CONTENT

Recent curriculum reform in participant countries has often been motivated by factors related to the impact at national or sub-regional levels of changes taking place at international or global levels. Of paramount concern are economic issues. Country reports and profiles express a preoccupation with equipping pupils with the basic knowledge and skills needed to be self-sufficient and productive citizens in an increasingly globalized, rapidly changing, uncertain, competitive and highly technological economic environment. Thus, a principal motivating factor for curriculum reform is the desire to design educational programmes that will more adequately prepare young people for the job market within the existing economic climate, while providing the human resources necessary to ensure sustainable national development.

The concern of keeping pace with rapid global economic change is reflected in the commonly expressed goals of improving the quality and scope of vocational education, strengthening science and technology education, developing competence in information technology (IT) skills by introducing or expanding the use of IT in the classroom, and focusing on the teaching of a wide range of cognitive, social and personality skills so as to develop the capacity for flexibility, problem-solving, creativity, initiative and lifelong learning. An examination of the country reports indicates a variety of efforts being made to incorporate or upgrade these areas of content within the curriculum.

Other key areas of concern in educational content relating to issues of global significance include environmental change and degradation, population control, gender issues, and international understanding and cooperation. Some of these issues are taught as separate subjects, but are often integrated into other existing subjects or treated as cross-curricular areas. The Maldives and Nepal refer to major recent reforms to the social studies curricula so that these issues are properly taken into account.

Importantly, reports indicate a preoccupation with developing curricula fostering respect for, and preservation of, cultural traditions and indigenous values and ways of life, while preparing young people to be part of the modern global society. India, Indonesia, Thailand and Viet Nam all single out the concern for finding a balance between traditional/national and modern/global elements in the curriculum. Nepal refers to the tension existing in the development of the social studies curriculum between these often conflicting values and world views.

Related to the concern to preserve indigenous cultural traditions and lifestyles is the commonly expressed goal of fostering moral values and ethics among pupils through religious education, moral education and other subjects, such as citizenship. Some countries, like India, have advocated the teaching of values through all subjects in the curriculum. Promoting the concept of citizenship is also a key educational goal of many countries, with civics often included as a separate curricular subject. While a priority aim of citizenship is the promotion of national integration and unity, a number of reports additionally cite the objective of promoting democratic values, and respect for, and appreciation of, the cultural diversity which char-

acterizes both their societies and the broader global society.

ORGANIZATIONAL STRUCTURES OF CURRICULUM DEVELOPMENT

The structure of curriculum development in most of the thirteen countries represented is predominantly centralized, with varying degrees of active decision-making at regional, local and school levels. The main pattern is for a central body within, or outside of, the Ministry of Education to be charged with developing curricula based on governmental educational policy, with regional authorities responsible for implementing these policies in schools within their specific province or district.

A number of countries have a section/unit/centre within the Ministry of Education devoted to curriculum issues (Bhutan, Indonesia, Malaysia, Nepal, Pakistan, Philippines, Thailand), while others have a statutory body operating outside of the Ministry, but working closely with it in the development of curriculum (Bangladesh, India, Maldives). More than one national institution or body may share responsibility for developing the curriculum, as in the case of Myanmar where the Department of Educational Planning and Training in the Ministry of Education works with the statutory Basic Education, Curriculum, Syllabus and Textbook Committee, or in Sri Lanka, where curriculum objectives and competencies formulated by the Ministry of Education and the National Education Commission are translated into individual subject curricula and syllabi by the National Institute of Education (NIE).

Wider participation in the curriculum development process takes place in many countries through advisory and subject specialist committees formed within ministries or curriculum development units/centres to assist in curriculum design and implementation. In some cases, technical committees may be formed on an ad hoc basis to support specific reform programmes. Committees are usually composed of a wide representation of educational specialists and professionals from the Ministry of Education, regional education authorities, universities and research institutes, teacher-training institutions and, in some cases, schools.

Indonesia, the Philippines and Thailand report that considerable responsibility is devolved to regional educational authorities, who adapt central curriculum objectives to local contexts where this is felt to be necessary. Indonesia has developed a curriculum network involving all regions of the country in elaborating and implementing the national curriculum according to local realities and needs. Principals and leading teachers from all school levels participate in this network, along with staff from regional educational offices. In India, the country with the most decentralized education system, curricular frameworks formulated at central level with regional input, are translated into curriculum plans by individual states.

While genuine school-based curriculum development does not appear to take place on a significant scale in any of the countries, a number report the participation of teachers in the development of textbooks and other instructional materials. In the Philippines, schools and teachers are encouraged to be innovative in interpreting and adapting the basic curriculum guidelines to suit the local reality and needs. The Maldives express a concern to involve teachers to a greater extent in future reforms in an effort to improve their design and the degree to which they are implemented.

Generally, countries do not refer to existing strategies of broad-based community participation in curriculum development. However, a number (India, Nepal, Philippines, Viet Nam) indicate a growing awareness of the importance of adopting more genuinely participatory approaches to the process.

CHANGES IN TEACHING/LEARNING STRATEGIES AND STUDENT ASSESSMENT

Efforts to develop curricula that will more effectively prepare young people to meet the demands of contemporary and future society are reflected in the growing trend in a number of countries to introduce competency-based programmes at both primary and secondary levels. Under the traditional systems of schooling, large percentages of children fail to acquire even a basic education that would equip them to lead productive and self-sufficient lives once they leave school. This situation becomes all the more critical in countries where vast numbers of children are at best only able to complete the years of primary schooling.

Bangladesh, India, Sri Lanka and the Philippines have all introduced competency-based curricula, while Indonesia is attempting to define 'minimum learning competencies'. A glance at the primary school curricula of Malaysia and Thailand similarly indicates a preoccupation with the teaching of skills, values and attitudes, as opposed to more traditional orientations towards predominantly content-based curricula. Competency-based curricula focus on the attainment by pupils of a stated number of clearly defined skills or competencies at the end of each stage and level of formal education, indicating a concern to change curricula that previously focused on academic achievement and were based primarily on coverage of content. With a competency-based approach, methods of assessment change significantly—continuous and varied evaluation of student progress takes into account many previously ignored areas of competence. Teachers become more accountable for student outcomes, but in principle also have a clearer idea of what pupils are expected to achieve at the end of each stage and level of schooling in each subject area.

Many countries (Bhutan, Indonesia, Maldives, Nepal, Sri Lanka, Thailand, Viet Nam) refer to efforts to introduce more student-centred instructional approaches, in line with world trends. Giving the pupil more autonomy in the learning process is felt to foster greater motivation, creativity and self-sufficiency in the child, developing skills of inquiry, research and problem solving, which present teacher-centred traditions do not encourage.

MAIN PROBLEMS FACING CURRICULUM DEVELOPMENT

A number of problems in the design, implementation and follow-up of curriculum reform were identified, many shared by all countries, although the degree and extent of the problems will vary considerably among the participating nations. Limited financial, human and material resources in all countries constitute a major obstacle to the success of reforms at all levels and stages of the process.

Curriculum design and implementation

Countries indicate that **existing structures and mechanisms for curriculum design and implementation are often inadequate** in a variety of ways. In addition to the key problem of lack of staff, there are fundamental aspects of decision-making and administrative processes that may create obstacles to successful curriculum development and reform. Top-down patterns of decision-making often do not provide for sufficient situational analysis and research in curriculum design. The failure to involve key stakeholders—and teachers in particular—adequately in decisions about curriculum change is likely to result in resistance and lack of understanding on the part of those who are to be the implementers of the reforms—the teachers.

Inadequate time allocation to the entire curriculum development process was identified as a key problem by Bhutan and is also likely to be an issue in other countries. Once decisions are made, reforms are often hurried through, with too little time devoted to careful implementation and follow-up in relation to vital areas, such as teacher preparation, piloting of reforms, analysis of feedback, subsequent revision and re-testing, regular supervision and evaluation.

Lack of professional expertise is expressly cited by numerous countries as a major obstacle to successful design, implementation and also follow-up of curriculum development (Bangladesh, Bhutan, Maldives, Nepal, Pakistan, Philippines, Viet Nam). Reports refer to the limited number of curriculum specialists available, and, in some cases, to the rapid staff turnover in key areas of curriculum development leading to lack of continuity in implementation and follow-up of change.

A related problem in at least some countries is **the absence of a strong research base for curriculum change**. Bangladesh refers to the urgent necessity for a curriculum research wing to be established in order for curriculum development to be able to respond to the nation's real and most pressing educational needs. Aggravating this situation is the limited access to up-to-date information on trends and developments in curriculum reform in other countries, mentioned by Bhutan, Maldives and Viet Nam.

The inadequate preparation of principals and teachers for curriculum change is a challenge for all education systems. Many reports mention the unsatisfactory situation regarding teacher quality and the inadequate provision of suitable pre- and in-service programmes as an integral part of curriculum development and reform. This situation inevitably leads to classroom practices that remain much the same, despite reforms on paper. Countries make reference to the difficulties of implementing major pedagogical innovations in the classroom, such as competency-based curricula and child-centred learning. Resistance to, or inadequate understanding of, these approaches by teachers stems at least partly from their poor preparation for change.

India, Indonesia, Philippines and Viet Nam all cite **overloaded curricula** as a major problem. There is clearly a dilemma between the need to update the curriculum, adding important new areas of content, while attempting to reduce overall curriculum load and focus on the teaching of skills and competencies, rather than on mere knowledge. In this regard, countries are faced with the challenge of defining basic subject content and finding effective ways to integrate related subject areas, while identifying and defining minimum learning competencies. However, the competency-based approach is likely to overload the curriculum further, if sufficient attention is not paid to adequately balancing competencies and content. In the Philippines, where the basic education cycle is the shortest among ASEAN countries, and the curriculum is both content/topic based and competency-based, teachers have difficulty covering curriculum content at the different levels, with a 'backlog' of untaught areas building up.

Change is also rendered difficult by **examination-oriented education systems**, which pressure teachers to focus on the syllabus rather than implement recommended changes. This problem, cited specifically by Bhutan, was also alluded to by Viet Nam, which referred to the over-dependence on examinations and testing in its education system.

Apart from the limited capacity of many countries in ensuring adequate textbook supply and distribution to large and scattered student populations, there is also the challenge of preparing **quality teaching materials** which will effectively serve as tools for changing teaching/learning approaches. Without suitable materials, teachers are all the more likely to continue with traditional methods, particularly where they are overly dependent on textbooks for their teaching.

Follow-up and evaluation

Several countries (Bangladesh, Bhutan, Indonesia, Maldives, Nepal, Pakistan, Philippines, Thailand) indicate **the inadequate mechanisms for supervising, monitoring and evaluating change**—a major obstacle to successful reform. This is due to various factors already cited: lack of resources, particularly as regards quality personnel at all levels; inadequate planning, administrative and supervisory structures; as well as large populations, difficult geographical terrain and isolated territories. Bhutan refers to the lack of proper articulation between central administration and provincial/local authorities, while the Philippines describes the failure to staff offices at the divisional level with qualified subject specialists. Failure to carry out systematic evaluation of reforms clearly limits sustained educational development.

Another challenge is that of **sustaining externally funded reforms**, a problem specifically referred to by the Philippines and likely to face most developing countries. Once external funding comes to an end, the programme risks being abandoned.

ADVANCES AND SUCCESSES IN CURRICULUM DEVELOPMENT

In spite of the numerous difficulties countries in the region face with regard to curriculum development and renewal, the following reports indicate a concerted effort by countries to improve their school curricula. There appears to have been considerable innovation in terms of introducing or updating subject matter, as well as in adopting new instructional approaches based on world trends.

Countries describe various major projects—of which curriculum development forms an integral part—undertaken in recent years to improve educational provision. Particular emphasis has been put on providing better quality basic education, with countries such as Indonesia and the Maldives increasing the duration of this cycle in an attempt to improve learning opportunities for all pupils. Reports indicate a growing awareness that the curriculum has to be oriented towards the development of skills which will facilitate and encourage learning throughout life by all pupils, whether or not they have access to secondary or higher education.

Countries such as Bhutan, Maldives and Nepal have gone a long way towards indigenizing curricula inherited from colonial powers or powerful neighbours, recognizing the need to make content relevant to the everyday needs and experiences of pupils. Reforms, such as that of Nepal in social studies, indicate the efforts being made to improve the quality of teaching materials. Countries also testify to a greater awareness of the importance of developing curricula that foster international understanding and the principle of global citizenship.

It is to be hoped that, increasingly in all the countries concerned, the structures for on-going and sustained curriculum development at primary and secondary levels will be systematically strengthened, permitting truly participatory approaches to educational provision and meaningful change in educational practice. In this way, the chances in life for all children and young people will be significantly improved.

PART V:

COUNTRY PAPERS ON CURRICULUM DEVELOPMENT FROM SELECTED STATES IN SOUTH AND SOUTH-EAST ASIA

Bangladesh

Curriculum planning, development and reform for primary and secondary education

Muhammad Abul Hossain and Shawkat Jahan

Estimated population (1995)	118,200,000
Public expenditure on education as percentage of Gross National Product (1995)	2.3
Duration of compulsory education (years)	5
Primary or basic education	
Pupils enrolled (1995)	16,800,000
Teachers (1995)	189,508
Pupil/teacher ratio	71:1
Gross enrolment ratio (1995)	
—Total	63
—Male	72
—Female	53
Net enrolment ratio (1995)	
—Total	84
—Male	89
—Female	78
Estimated percentage of repeaters (1995)	7
Estimated percentage of drop-outs (1995)	55
School-age population out of school (1995)	2,260,000
Secondary education	
Students enrolled (1990)[1]	3,592,995
Gross enrolment ratio (1993)[1]	
—Total	19
—Male	26
—Female	12
Third-level enrolment ratio (1992)[1]	4.0
Estimated adult literacy rate (1995)	
—Total	38
—Male	49
—Female	26

Note :
1. Last year available

Source: UNESCO statistical yearbook, 1998, Paris.

INTRODUCTION

The Government of Bangladesh recognizes that education is an important prerequisite for ensuring sustainable development. The country's constitution obligates the State to provide basic education to citizens and eradicate illiteracy within a given time frame. As a signatory to the World Conference on Education For All (Jomtien, Thailand, 1990); World Conference on Children's Rights (New York, 1990); and the EFA Summit Conference of Nine High-Population Countries (New Delhi, 1993), Bangladesh is committed to the eradication of illiteracy by the year 2006.

As a result of both government and private efforts over the last two decades, some important improvements have occurred in the primary education sector. More than 95% of children aged 6 to 10 years are admitted to primary schools and the drop-out rate is now only 38%. The literacy rate for the population over 15 currently stands at 56%, in comparison to 1971 post-liberation figures reflecting a rate of only 22% for that same group. During the past twenty-five years, considerable improvements have also taken place in secondary education.

However, although Bangladesh has experienced *quantitative* educational improvement, the *qualitative* aspects of education have become a cause of government concern. Steps have been taken to address educational quality and it is in this larger context that curriculum has come to play a crucial role. In order to place in proper perspective some of the key issues and actions taken to improve educational quality, a brief overview of primary and secondary education structures and of curriculum development is provided below.

PRIMARY EDUCATION IN BANGLADESH

Duration of primary education

The current five years for completing primary education is an insufficient amount of time for students to obtain the requisite level of literacy, knowledge, abilities, attitudes and values for solving the problems of everyday life. The New Education Policy, which has yet to be implemented, recommends that primary education be increased from five to eight years in order to enable students to attain minimum ability levels and the capacity for lifelong learning.

TABLE 1. Bangladesh primary education institutional enrolment

Year	Total	Boys	Girls
1990	12,051,172	6,662,427	5,388,745
1991	12,635,419	6,910,092	5,725,328
1992	13,017,270	7,048,542	5,968,728
1993	14,067,332	7,525,862	6,541,470
1994	15,180,680	8,084,117	7,132,563
1995	17,284,157	9,094,489	8,189,668
1996	17,580,416	9,219,358	8,361,058
1997	18,031,673	9,364,899	8,666,774
1997	Total number of government primary school students: 11,808,345		

TABLE 2. Bangladesh primary education enrolment by gender (%)

Year	Boys	Girls
1990	55.28	44.72
1991	54.69	45.31
1992	54.15	45.85
1993	53.50	46.50
1994	53.02	46.98
1995	52.62	47.38
1996	52.44	47.56
1997	51.94	48.06

TABLE 3. Bangladesh primary education drop-out rate (% of total enrolment)

Year	Rate
1991	59.30
1992	46.60
1993	39.60
1994	38.70
1995	38.00

Different systems of primary education

A number of different institutions of primary education exist including: kindergarten, general primary, Ebtadayee Madrasah and non-governmental organization schools. The standards and characteristics of these schools vary. Thus, from the very outset, differences in children's abilities, attitudes and values are created. It has become mandatory to eliminate these existing educational disparities and to introduce a common system of education. Currently, approximately 78,000 primary schools are subsumed under ten or eleven distinct categories. The following tables provide an overview of the current situation.

Beginning in May 1986, the Government decided to merge the primary school classes I and II and, concurrently, to introduce a liberal promotion policy as part of the effort to further reduce drop-out rates. With this liberalized policy, promotion from classes I to II and from classes II to III became automatic. However, assessment of pupils' performance is still supposed to occur throughout the year.

SECONDARY EDUCATION IN BANGLADESH

Current general secondary education scenario

The present secondary education system in Bangladesh encompasses grade levels 6 to 12. Most secondary schools are private. In 1996, only 3.6% of the total number of recognized schools were government schools. Secondary education is divided into three stages: junior secondary (classes VI and VII); secondary (classes IX and X); and higher secondary (classes XI and XII). Higher secondary schools can be intermediate colleges or degree colleges. A significant increase (16.4%) in the total number of secondary institutions occurred between 1995 and 1996, with secondary and higher secondary schools accounting for most of the increase. Table 4 reflects the growth in secondary education from 1991 through 1996.

Noteworthy progress in some areas and stagnation in others characterize secondary education in Bangladesh. Significant progress has been made in improving enrolment, especially among females. Programmes encouraging the enrolment of girls in secondary education have had a profoundly positive effect, with an increase in enrolment from 31.9% in 1991 to 45.6% in 1996. However, in contrast, transition, attendance, completion and pass rates remain low. Table 5 reflects the recent enrolment figures for secondary education.

In 1995, 78% of the students completing class V went on to enrol in class VI. The average secondary school attendance rate was about 60%. Completion rates for classes VI to X improved, reaching 56.4% in 1995, in comparison to 48% in 1991. However, these figures belie a highly inefficient system, with drop-out rates remaining high and pass rates in final exams declining. For example, in 1995, the estimated drop-out rates for classes VI to X and classes XI and XII, respectively, were 43.6% (49% for girls) and 38% (36% for girls). In 1997, the pass rate for the class X Secondary School Certificate Examination (SSC) was only 52.14%, compared to 64.95% in 1991. For the class XII Higher Secondary Certification Examination (HSC), the 1997 rate of 52.14% was down from a high of 64.95% in 1991. Furthermore, only 15.8% of the junior secondary school and 36.7% of secondary school teachers have professional qualifications.

TABLE 4. Growth of Bangladesh secondary education sector institutions*

Type of institution	1991	1992	1993	1994	1995	1996
Junior secondary	2,000	1,962	1,905	2,136	2,349	3,002
Secondary (of which Governmental)	8,715 (302)	9,038 (316)	9,190 (317)	9,352 (317)	9,363 (317)	10,776 (317)
Intermediate colleges (Governmental)	366 (11)	387 (11)	467 (11)	603 (11)	903 (9)	901 (8)
Degree colleges (of which Governmental)	547 (204)	598 (219)	603 (219)	611 (219)	671 (224)	786 (225)
Total institutions	11,586	11,964	12,085	12,566	13,286	15,465
% increase		3.3	1.0	4.0	5.7	16.4

*Recognized schools only

TABLE 5. Bangladesh secondary institutions enrolment, 1991–98

Enrolment	1991	1992	1993	1994	1995	1996
Junior secondary	21,2646	284,806	341,975	446,060	494,692	632,211
No. female	75,231	121,174	183,497	227,239	266,811	340,982
Secondary	2,943,473	3,463,236	3,809,515,	4,088,742	4,620,769	5,492,114
No. female	994,947	1,478,031	1,680,028,	1,858,222	2,35,973	2580,578
College	876,756	904,250	936,395,	1,127,416	1,267,706	1,246,705
No. female	214,390	248,854	291,566	367,992	422,712	436,624
Total enrolment	4,032,875	4,652,292	5,087,885	5,662,218	6,383,167	7,371,030
Female enrolment	1,284,568	1,848,059	2,155,091	2,453,453	2,825,496	3,358,184
% Female enrolment	31.85	39.72	42.35	43.33	44.26	45.56

With a view to increasing women's participation at secondary level, the Government, the Norwegian Overseas Development Agency (NORAD), the Asian Development Bank (ADB) and the World Bank are supporting stipends for female students. This programme has served to increase the enrolment of women in secondary education institutions.

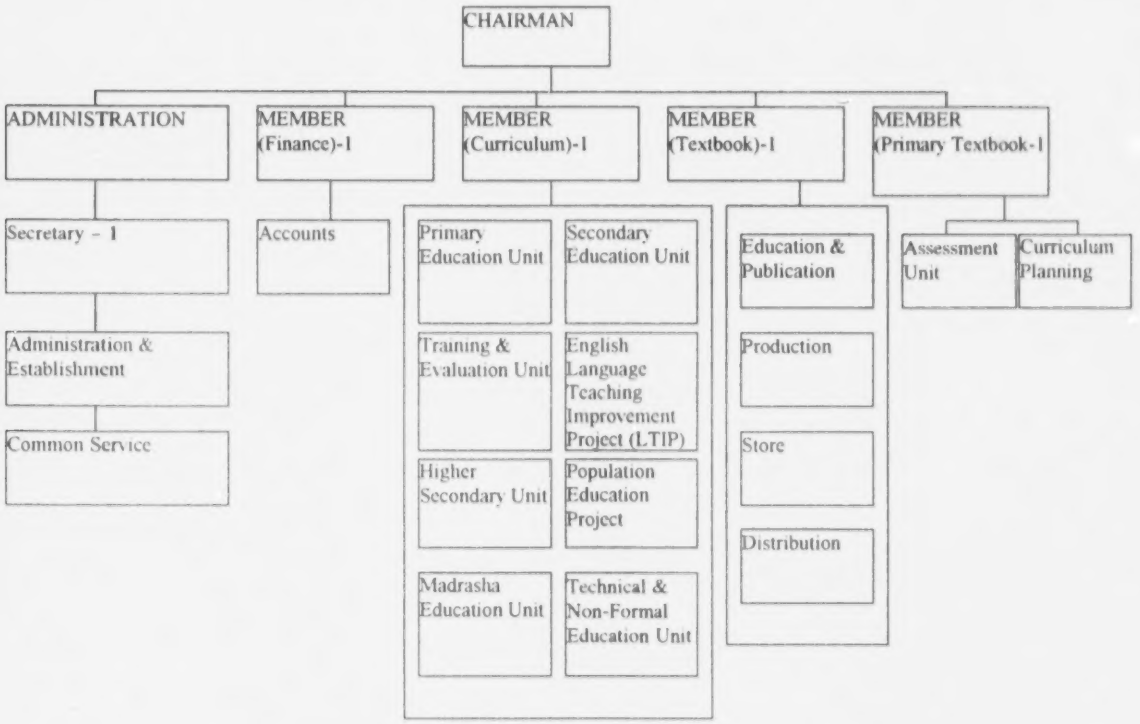
CURRICULUM DEVELOPMENT IN BANGLADESH

In 1982, the National Curriculum Development Centre merged with the Textbook Board to form the National Curriculum and Textbook Board (NCTB). The NCTB currently serves as the national curriculum agency for the country as a whole and has been entrusted with curriculum and instructional materials development activities from pre-primary to pre-university level. The organizational structure of the NCTB is reflected in Figure 1.

The tasks of the National Curriculum and Textbook Board include:

- completion of curriculum revision for all primary grades;
- field trials as well as the production of teaching-learning materials for classes I-V, including pupil assessment schemes;
- revision of the curriculum in education and the curriculum for pre-service education and training of primary school teachers;
- introduction of revised curriculum and materials for classes I-V in the school system throughout the country;
- development of supplementary/complementary teaching aids (i.e. charts, maps, reading-learning materials, kits, video films, etc.);
- organization of experimental and innovative activities in the content of primary education;
- development of the capacity to address women's development issues;
- provision of technical support to other institutions in developing curriculum and establishing linkages between formal, non-formal, religious education streams;
- development of training packages and participation in the training programmes for dissemination of revised primary curriculum;
- monitoring and evaluation of the training programme and development of reinforcement materials;
- development of motivational materials for media coverage;

FIGURE 1. The Bangladesh National Curriculum and Textbook Board



- revision of Junior Secondary Curriculum and materials in line with the revised primary curriculum and field trials;
- review of existing secondary curriculum and development of a plan of action for modification.

During the Third Five-Year Plan (1985–90), the NCTB undertook comprehensive curriculum renewal and modification activities in the area of primary education. The main thrust of this activity was to restructure and reform the primary curriculum to meet the demands of universal compulsory primary education, with particular focus on *qualitative* improvement. The outcome was a competency-based primary school curriculum comprised of fifty-three terminal competencies to be achieved by all primary school pupils who successfully complete the five-year primary education cycle.

In this context, the following have been developed: detailed syllabi for eleven subject areas of grades I and II; a trial edition of textbooks; teacher source books; and a continuous pupil assessment scheme, along with a register for keeping assessment records. Improvement of curricula has been undertaken with the help of foreign and domestic experts. Steps have been taken to train teachers to be able to use new materials with understanding and skill, with a view to preparing them to introduce the competency-based curriculum. The curriculum emphasizes mastery learning supported by diagnosis of pupils learning difficulties, followed by remedial instruction, appropriate teaching-learning strategies, revised instructional materials, and tools and techniques for continuous assessment of pupil performance.

The new curriculum was implemented during the Fourth Five-Year Plan (1990–95), with new approaches towards the evaluation of pupils' achievements. The primary level curriculum has been formulated on the basis of Bangladesh's socio-economic situation, as well as the children's physical and mental make-up and their cultural awareness. Subjects in primary level include Bangla (the mother tongue), mathematics and environmental studies, social studies, science, arts and crafts, physical education, music, English language and religious studies (with emphasis on the ways of life and moral education) will be introduced in class III. Classes VI to VIII will be gradually incorporated under primary education. At these levels, the subjects to be studied will be Bangla, mathematics, general science, social studies (Islam, Hinduism, Buddhism, Christianity), multi-disciplinary learning (home economics, agriculture, etc.), religion, fine arts, health and physical education. The present curriculum at the primary as well as junior secondary and secondary stages contains elements of population education, including information on the socio-economic impact of the population explosion. The content has been incorporated into the textbooks of classes III to X.

The average amount of weekly teaching hours in each grade at primary level is three hours for Bangla; three hours for mathematics; thirty minutes for music, arts and crafts, and physical education; and two-and-a-

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half hours for all the other subjects. The medium of instruction is Bangla (mother tongue).

In the present curriculum, summative assessment (in the form of an annual examination in each grade) has been abandoned. Instead, a system of continuous pupil assessment has been introduced. The system requires teachers to assess students regularly for every competency acquired in a particular lesson (through observation, oral/written assessment) and to record achievement on a monthly basis using three scales (namely grades A, B and C). For grades I–II, all the students get promoted to the next classes, and for grades III–V, promotions are given on the basis of students' achievement. No certificate is awarded after completion of the five-year primary schooling, but a scholarship examination is held annually for 20% of the students of grade 5—on the basis of which scholarships are awarded to successful students.

CURRICULUM DEVELOPMENT AT THE SECONDARY LEVEL

Under the Secondary Education Development Project of the ADB, the junior secondary school curriculum has been revised and materials prepared on the basis of competencies identified for this stage of education; approximately 150,000 teachers have received short-term training in the new curriculum; ten teacher-training colleges have been upgraded; and pre-service and in-service training programmes have been conducted. Under the ADB Higher Secondary Education Project, five new higher teacher-training institutes are being established. During 1996–98, the secondary and higher secondary curricula were revised and implemented and textbooks prepared. The monitoring and evaluation systems have been improved and implemented. Table 6 provides an overview of the curriculum development and implementation process.

TABLE 6. The curriculum: who makes which choices?

	CENTRAL LEVEL	REGIONAL LEVEL	SCHOOL LEVEL
AIMS AND OBJECTIVES	National Curriculum and Textbook Board prepares curriculum in light of national education philosophy and policy; National Curriculum Co-ordination Committee of Ministry of Education subsequently approves	Local authorities assist with curriculum development by providing suggestions	Teachers prepare lesson plans based on curriculum
CURRICULUM PLAN	Prepares syllabus and distribution of subject marks. Prepares time table.	Monitors the implementation of curriculum	Implements the curriculum at the classroom level
METHODS AND APPROACHES TO LEARNING	Field tests and finalizes the intended curriculum	Assists with the finalization of curriculum	Measures competency attainment
MATERIALS	Prepares teachers' guides and learning materials	Distributes teachers' guides and learning materials (local levels: divisional deputy directors, district and Thana education officers)	Utilizes teachers' guides and learning materials in classroom
EVALUATION AND EXAMINATION	Prepares evaluation and examination plan	Implements secondary level examination (various regional boards)	Conducts terminal examinations at primary and secondary levels

CURRICULUM DEVELOPMENT: AREAS FOR IMPROVEMENT

Some of the major deficiencies in curriculum development in Bangladesh include: (a) lack of professional expertise in the development of modern curriculum, both in the NCTB and nationally; (b) lack of a solid research base providing assessment information about the previous curriculum and the areas needing revision; and (c) insufficient curriculum emphasis on such competencies as understanding, comprehension and application.

Although the three stages of secondary education form part of a concentric curriculum development, during the actual development process there was little co-ordination between these stages. In fact, the greatest part of the work was carried out for the junior secondary stage, and then subsequently reviewed in each of the other stages where attempts were made to address areas of weak emphasis by adding content.

Another problem is the absence of a system of ongoing curriculum review. The syllabus standing committee system within NCTB is not operational. The curriculum section staff should be monitoring the curriculum

and textbooks usage and effectiveness in the teaching situation in order to ensure that they are up-to-date and relevant. Unfortunately, at present, this important work is not being done.

The establishment of a curriculum research section is urgently needed for effective curriculum development. The issues affecting the impact of curriculum change in the classroom need to be assessed objectively. Without this research base, curriculum development will continue to be based largely on ad hoc decisions resulting from the views of persons who often lack first-hand knowledge of the overcrowded and poor conditions in most schools. The staff of such a research section will require training and support, as well as increased resources, in order to perform regular classroom visits and assessments.

Lack of expertise is also a fundamental problem. Reviews of the capacity of the NCTB by different institutions in Bangladesh have repeatedly highlighted the lack of trained professional curriculum developers.

CONCLUSIONS

Although *growth* in the primary and secondary education sectors in Bangladesh is quite satisfactory, the *quality* of education is not. However, the country is striving hard to achieve this quality and, in this context, many efforts have been undertaken with the help of domestic and expatriate experts to improve the curriculum.

Bhutan

Curriculum development for primary and secondary education

Deki C. Gyamtso and Namgyel Dukpa

Estimated population (1995)	1,800,000
Public expenditure on education as percentage of Gross National Product (1995)	–
Duration of compulsory education (years)	–
Primary or basic education	
Pupils enrolled (1994)[1]	60,089
Teachers (1995)	–
Pupil/teacher ratio (1994)[1]	31:1
Gross enrolment ratio (1995)	
—Total	73
—Male	82
—Female	63
Net enrolment ratio (1995)	
—Total	53
—Male	58
—Female	47
Estimated percentage of repeaters (1994)[1]	19
Estimated percentage of drop-outs (1995)	18
School-age population out of school (1995)	100,000
Secondary education	
Students enrolled (1995)	–
Gross enrolment ratio (1995)	
—Total	–
—Male	–
—Female	–
Third-level enrolment ratio (1995)	–
Estimated adult literacy rate (1995)	
—Total	42
—Male	56
—Female	28

Notes:
1. Last year available.
– = data not available.

Source: UNESCO *statistical yearbook, 1998*, Paris.

BACKGROUND INFORMATION

The kingdom of Bhutan is a mountainous, Buddhist country with an area of roughly 46,000 square kilometres, located between China in the north and India in the south. It has been an independent nation throughout its history, although it was only in the seventeenth century that Zhabdrung Ngawang Namgyel (1594-1652) unified it into one nation-state. The present King, His Majesty Druk Gyalpo Jigme Singye Wangchuck, is the fourth monarch to rule the country.

Prior to the year 1920, monastic education, which included the study of Buddhist religion, liturgy, philosophy, astrology and the fine arts (painting, sculpture, music and dance), was the only form of formal education available in the country. The first modern school was established in 1920 (Dolkar, 1995). Modernization in Bhutan, however, can be said to have begun only in 1961 with the launching of the Five-Year Development Plan (1961-65). From the outset of the planned development, the number of schools in Bhutan increased to fifty-nine (twenty-nine private and thirty governmental) and a Department of Education was established. With the creation of this institution, the private schools were converted into governmental schools, thereby establishing a centralized and uniform system of education which has largely continued until today, although a few private schools have been opened lately following government encouragement. With the Royal Government's heavy investment on education during the Five-Year Development Plans, within a period of three and half decades, Bhutan has been able to create a modern education system from primary to tertiary levels. Enrolment at all levels has grown considerably over the years as a result of the government's commitment to education. By 1998, the total number of students reached 100,355 (Planning Section, 1998).

The present pre-tertiary educational structure consists of nine years of basic education, comprising one year pre-primary, six years primary, and two years junior high, followed by four years of secondary education comprising two years of high school and two years of higher secondary level. Access from one level to the other is merit-based and determined by the national and external examinations, as well as by the human resource plans and the space available at the relevant levels of education.

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TABLE 1. Summary of education statistics (April 1998)

1. Number of schools and institutions

Community schools	115	High schools	18
Primary schools	128	Private schools	7
Junior high schools	44	Institutes	10
		Total	322 and 54 NFE centres

2. Number of students

Community schools	12,695	Private schools	1,544
Primary schools	41,733	Institutes	2,004
Junior high schools	29,502	Non-formal education	1,842
High schools	11,035		
		Total	100,355

3. Number of staff

	Teachers	Others	Total
Community school	305	12	317
Primary schools	1,058	190	1,248
Junior high schools	751	134	885
High schools	386	175	562
Private schools	70	9	79
Institutes	215	161	376
Total	2,785	681	3,466

The National Institute of Education (NIE) offers a three-year Bachelor of Education degree course for grade XII graduates and a one-year teacher training programme—Post-Graduate Certificate in Education (PGCE)—for candidates who already have a Bachelor's Degree either in humanities, commerce or science. The two-year Primary Teacher's Certificate (PTC) course is offered for the grade X graduates at the NIE, as well as the Teacher-Training College (TTC) in Paro. NIE has also started a Distance Education Programme for primary teachers since 1995. An eighteen-month training programme for Dzongkha (national language) teachers is also offered by the Teacher-Training College, Paro.

Education has always been provided free of charge from primary to tertiary level. This includes not only free tuition, but also the provision of textbooks, stationery, meals and boarding facilities where required.

THE CURRICULUM

The school curriculum until the mid-1980s was imported from India and all the teaching materials were those prescribed for Anglo-Indian schools, except for Dzongkha. From the mid-1980s, the then Education Department started *Bhutanizing* the education system so that teaching and learning in schools was in accordance with national needs and aspirations (Second Quarterly Policy Guidelines, 1989, p. 8). The development of a relevant curriculum and curriculum materials for schools throughout the country began following this important policy change.

The first big curricular change came with the introduction of the New Approach to Primary Education (NAPE) project which emphasized activity-based learning, shifting the focus from 'teacher-centredness to child-centredness, as well as from remoteness of content to familiarity of content' (Dolkar, 1995).

The next big change was the introduction of Bhutanese history and geography for grades 6–8 in 1990, and then for grades 9–10 in 1993, whereby students are expected to acquire knowledge, skills, values and attitudes through this change in order to 'develop pride in being Bhutanese; ... a sense of self-discipline and duty; ... spiritual, cultural and traditional values and so contribute to national and social cohesion' (National Education Policy, 1984). Changes have also been brought about in the other school subjects.

MAIN ORGANIZATIONS INVOLVED IN ADAPTING CURRICULA

The adaptation of curricula takes place at various levels in the country. A brief discussion of the agencies involved is presented here.

Central level

Since all educational institutions are government-financed, educational programmes are largely controlled from the centre. The task of initiating and implementing all educational programmes in the country (in line with national educational policies) is entrusted to the Ministry of Health and Education (MHE) and the Education Division (ED) via its various sections (see Figure 1). The Curriculum and Professional Support Section (CAPSS), Educational and Monitoring Support Section (EMSS), Bhutan Board of Examination (BBE), Non-Formal Education Section (NFES) and Youth Guidance and Counselling Section (YGCS) are the key existing professional bodies that are extensively involved in adapting curricula.

Curriculum and Professional Support Section (CAPSS). When the Department of Education (subsequently the Education Division) within the Ministry of Health and Education launched the programme of Bhutanization of the education system in the mid-1980s, a Curriculum and Textbook Development Division (CTDD) was created to develop curriculum and curriculum materials for schools. However, in 1994, the practice of curriculum development had evolved to the point whereby a committee of experienced educators and teachers (formed from various subject committees) took over the implementation. With this development, the CTDD was transformed into the currently existing CAPSS, now the main body involved in curriculum research and development for the formal school system. CAPSS is staffed by curriculum officers, headed by a Director and a Deputy Director, who are responsible for each subject (see Figure 2).

The main functions of CAPSS are:

- carrying out curriculum research and development;
- developing and writing syllabi, textbooks and manuals for grades PP-WI in all subjects;
- developing syllabi and textbooks for grades IX and X in consultation with BBE and ISCE Board, Delhi;
- training of teachers and pilot testing, evaluating, monitoring and revising curriculum materials; and
- conducting in-service workshops for teachers in different subject areas.

For the development of curriculum guidelines and materials at CAPSS, each subject unit has a subject committee (composed of members from various sections, training institutes and schools) with each unit's co-ordinator at CAPSS as the member-secretary. All innovations and changes in the curriculum and curriculum materials are discussed in the subject committee meetings, usually held twice a year. Proposals for initiating the innovations or changes are developed in consultation with the Director and Deputy Director, CAPSS, for further submission to the CAPPS Board, which meets once a year. The CAPSS Board comprises of the Director of Education as the Chairperson, all the section heads of the Education Division, Chairpersons of the various subject committees, the principal of the college, directors of the teacher-training institutes, one principal representing the high schools, and the Director of CAPSS as the member-secretary.

Once the proposal is approved, the curriculum officers of the subject units co-ordinate the work, involving subject committee members, subject specialists from the other sections, teacher-training institutes and schools. In terms of developing textbooks, CAPSS has started commissioning authors whose work is nevertheless closely monitored by the particular subject co-ordinator at CAPSS. All the new materials that are developed also need formal approval of the Board before being printed and supplied to schools for implementation. The new materials are also reviewed by schools and by the committee members prior to the submission to the CAPSS Board. CAPSS is also responsible for publishing all curriculum materials.

Bhutan Board of Examination (BBE). BBE is mainly responsible for organizing and conducting all national examinations for grades VI, VIII and X, Primary Teachers' Certificate Examination and Rigshung—grades X and XII. BBE also conducts workshops for teachers on principles and techniques of assessment and evaluation and is involved in developing general guidelines for assessment with the CAPSS. The subject specialists in BBE are also members of the various subject committees.

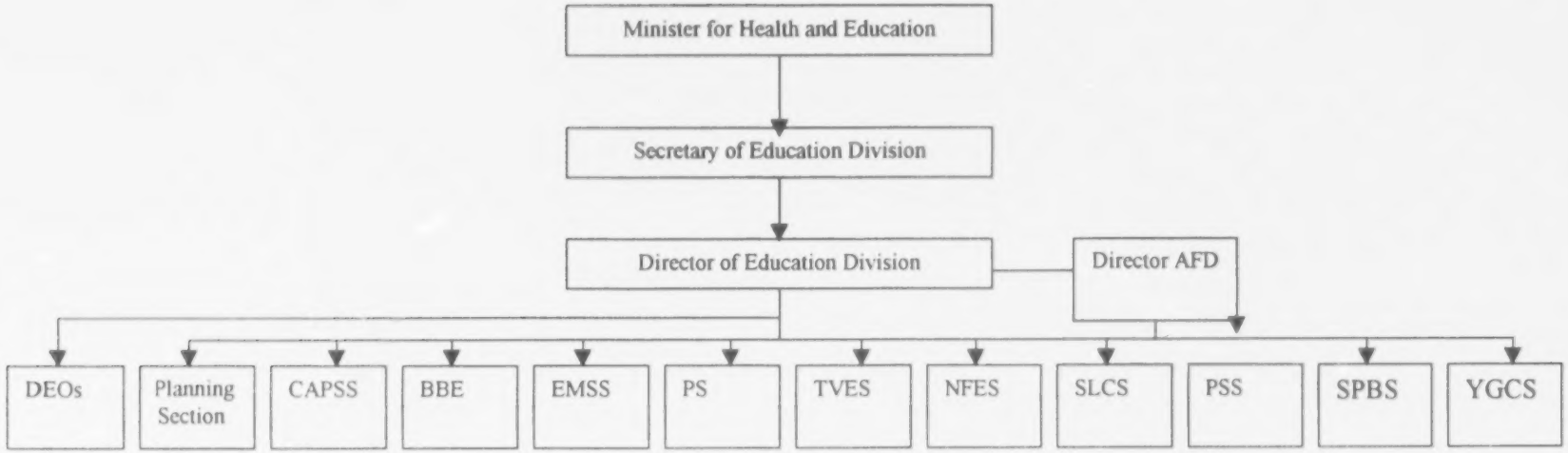
Education Monitoring and Support Section (EMSS). EMSS is mainly responsible for reporting on the general quality of education in schools. It monitors compliance with the national education guidelines and reports on the overall school effectiveness in relation to student achievement. This involves reviewing and evaluating school management, maintenance practices, curriculum practices, students' achievement and identification of good teaching practices as well as barriers to learning. EMSS is involved in providing necessary professional support to the District Education Officers and schools on a regular basis through forums such as Dzongkha Based In-service Programmes and School Based In-service Programmes. Some of the officers in EMSS are also members of various subject committees.

Youth Guidance and Counselling Section (YGCS). YGCS is involved in developing and implementing a range of co-curricular and extra-curricular programmes and activities, including Career Education and Guidance Programme, Scout Programme, Adolescent Health Education and Counselling Programme.

Non-Formal Education Section (NFES). NFES is mainly responsible for launching literacy and relevant life-skill programmes for school drop-outs and adults. Its main functions are:

- developing and publishing NFE learning materials;
- training NFE teachers;
- helping districts establish NFE and community learning centres; and
- monitoring NFE programmes and recommending policies.

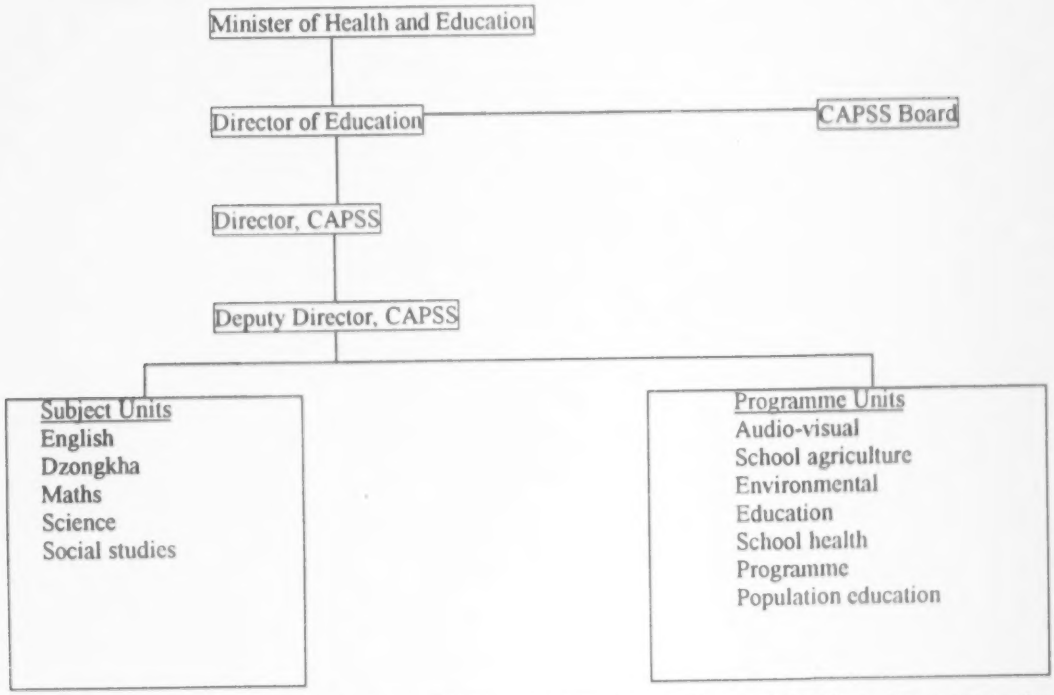
FIGURE 1. Organigram of the Education Division



Key:

DEOs	District Education Officers
CAPSS	Curriculum and Professional Support Section
BBE	Bhutan Board of Examinations
EMSS	Education Monitoring and Support Section
PS	Personnel Section
TVES	Technical and Vocational Education Section
NFES	Non-Formal Education Section
SLCS	School Liaison and Co-ordination Section
PSS	Procurement and Supply Section
SPBS	School Planning and Building Section
YGCS	Youth Guidance and Counselling Section

FIGURE 2. The Curriculum and Professional Support Section (CAPSS)



Technical and Vocational Education Section (TVES). TVES plans, co-ordinates and monitors technical and vocational training programmes. It ensures relevant vocational skills are included in the school learning process and promotes positive attitudes among students regarding technical vocations.

Teacher-training institutes. The two teacher-training institutes, the National Institute of Education and the Teacher-Training College, take an active part in adapting curricula through pre-service and in-service teacher training. This is done by: exposing them to various approaches of teaching and learning; assisting them in developing teaching materials from the available resources; equipping them with the necessary skills and teaching techniques; and assessment and evaluation of the teaching/learning process and the achievement of the students. Both institutes graduate 100 to 150 teachers every year for the primary and secondary schools. The lecturers of the institutes are also involved in the design and implementation of the curriculum as many of them are also members of the various subject committees. They also play an active role in organizing and conducting various in-service curriculum-related workshops for the teachers in the country every year.

District level

At the district level, the District Education Officers (DEOs) interpret for the benefit of the schools the aims and objectives and the curriculum directives from the Education Division. They provide academic and non-academic supervision, organize teacher and school development activities, monitor development activities and assist with school-based in-service programmes by visiting the schools regularly. They also support schools in obtaining teachers and resources, and developing the school infrastructure.

School level

At the school level, the head-teachers and teachers interpret the aims and objectives of education through the curriculum. They develop work schemes, lesson plans and teaching materials and practise different methodologies. Teachers also organize various types of co-curricular activities to provide pupils with balanced education. They carry out continuous assessment of the students' performance and set internal tests and examinations. They organize school-based in-service programmes to improve their classroom practices. Many teachers are also involved in developing curriculum materials at the centre and during resource national-based in-service workshops.

PROBLEMS IN ADAPTING CURRICULUM IN BHUTAN

Curriculum specialists in Bhutan face several problems, which are largely due to the short space of time in which the modern system of education has evolved. Discussion will be limited to the main problems faced in the design, implementation and follow up of reforms.

Curriculum design

The first main problem is the lack of expertise in curriculum development. There is not much scope for consultation nor the required support and guidance. Curriculum developers are left to cope on their own with their often

limited knowledge in the area. Outside experts are often invited to guide and assist, but, in many cases, their expertise and inputs are not relevant to the country's needs and situation. Valid and relevant comments for improvement are rarely received from the field. This largely affects the quality, clarity and appropriateness of the curriculum design.

Lack of resources and access to quality innovations due to financial constraints are other major problems. This limits curriculum developers' access to the wealth of information and ideas on curriculum design that are available in other counties.

Insufficient time for carrying out proper situational analysis and research is another major problem. Final decisions are largely top down (from the administrators who look for immediate action and quick outcomes), leaving staff with no choice but to design the curriculum within the set time frame, which in most cases is inadequate. The problem is further exacerbated by inadequate staffing, since the curriculum developer has other commitments and cannot devote adequate time to curriculum design.

This scenario, however, is rapidly changing with more people becoming specialized in curriculum development and change, thus creating more opportunities for educators to enhance their professional development. With their inputs, education in Bhutan is becoming more relevant and appropriate to the needs of the learners.

Problems in the implementation of the curriculum

As with the design process, time and resource constraints (both human and material) are the major problem. Because of the requirement for speedy implementation, inadequate time is allotted for pilot-testing the reforms in terms of their relevance and appropriateness, for carrying out a detailed plan of implementation, and for organizing resources. Furthermore, teachers hardly have the required time for preparation, the shortage of school-teachers being a perennial problem in the system.

More support materials are needed for effective implementation. Teachers do not have much access to reference materials, except basic school textbooks. Specialists cannot offer much support to the teachers during the implementation of reforms, since they cannot visit schools regularly due to busy schedules. Thus, in most cases, the initial orientation workshop held in the beginning to familiarize teachers with the reforms and their implementation is the only support and guidance that they receive. Under such circumstances, teachers maintain their old ways of teaching, with which they feel more secure, and new reforms are hardly implemented.

Lack of proper co-ordination among the various sections in the centre, and with the districts and schools, is another problem faced in implementation. Teachers who receive initial training in implementing the reforms are sometimes subsequently given a new assignment or transferred to another school, resulting in the changes not being introduced.

The education system, being examination-oriented also inhibits effective implementation of the curriculum as teaching time is restricted to covering the syllabus in time for the examinations.

The deployment policy of the Education Division can be seen as an additional problem. Very often the teachers who have graduated from NIE and TTC are sent to schools to teach subjects or levels for which they are not trained.

Problems in the follow-up of the reforms

The shortage of qualified human resources at all levels has led to a failure in establishing an adequate follow-up mechanism. Because of this, most of the reforms are without proper monitoring and evaluation, leaving the teachers to put the reforms into practice unassisted amidst the numerous difficulties facing them, as already discussed earlier. This has been recognized as a major drawback in the system and measures have been taken to rectify it. An INSET programme has been started to carry out an impact analysis of the 'what after' of the workshops, with a team of educators being given the task of collecting and analysing data from the teachers in the schools. Another positive development is the initiation of regular curriculum reviews of different subjects. These help educators adapt to the changes.

ANALYSIS OF A REFORM IN THE SOCIAL STUDIES CURRICULUM

Reasons for the reform

The change was brought about in the social studies curriculum from grades 6 to 10, in line with the aims and objectives of the national education policy to make the curriculum relevant to the national aspirations and in keeping with the Bhutanese culture. The old curriculum, being an imported one, was felt to be largely irrelevant to Bhutanese students. The content lacked any input about the history, culture and geography of Bhutan, resulting in the students knowing more about other countries than about their own. The reform thus involved change in content with the inclusion of Bhutanese history and geography and also in the teaching-learning approaches with a focus on activity and inquiry-based learning.

How the reform was conducted

The social studies co-ordinator at CAPSS, in consultation with the Director, designed the social studies syllabus with the involvement of subject specialists from the training institutes and school-teachers. Based on the syllabus, textbooks on the history and geography of Bhutan were developed. These went into trial use between 1988 and 1990. A review was then conducted, based on the feedback obtained from teachers. Follow-up workshops were organized for reorienting the teachers to the changes, after which the reform was implemented.

Outcomes and future prospects

While the new content was introduced into the curriculum by teachers, few changes were noticed in teaching approaches. The lecture and dictation method was still predominant with hardly any meaningful and experiential learning taking place. This may largely be due to the fact that fundamental change in teaching methods requires a

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change in belief about practice. To bring this about, a lot of pressure, support and guidance were needed. These elements were largely neglected due to constraints of human resources, resource materials and inadequate communication.

The social studies curriculum envisages a number of additional changes in the future. The most current issue is the integration of social studies up to grade VIII. The students will not be taught history and geography separately, instead they will learn social studies with more focus on development of values and attitudes and social skills. Bhutanese civics will be introduced in 1999 as part of the school syllabus, so as to enable students to develop an awareness of the functioning of the government and their own civic responsibilities. Approaches to the teaching of social studies have gradually improved over the years due to the adoption of the required teaching strategies by newly trained teachers.

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India

Education policies and curriculum at the upper primary and secondary education levels

National Council of Educational Research and Training

Estimated population (1995)	929,000,000
Public expenditure on education as percentage of Gross National Product (1995)	3.4
Duration of compulsory education (years)	8
Primary or basic education	
Pupils enrolled (1995)	109,734,292
Teachers (1995)	1,740,436
Pupil/teacher ratio	63:1
Gross enrolment ratio (1995)	
—Total	100
—Male	110
—Female	90
Net enrolment ratio (1995)	
—Total	87
—Male	98
—Female	76
Estimated percentage of repeaters (1995)	4
Estimated percentage of drop-outs (1995)	38
School-age population out of school (1995)	14,200,000
Secondary education	
Students enrolled (1995)	68,900,000
Gross enrolment ratio (1995)	
—Total	49
—Male	59
—Female	39
Third-level enrolment ratio (1995)	6.5
Estimated adult literacy rate (1995)	
—Total	52
—Male	66
—Female	38

Source: UNESCO statistical yearbook, 1998, Paris.

EDUCATION POLICIES AND THE CURRICULUM IN INDIA

Background

India is a union comprised of twenty-five states and seven territories. The Constitution provides directives regarding the development of education throughout the country. The areas in which the respective central and state governments have domain have been identified in the Constitution as the *central* list, *state* list and *concurrent* list. Until the late 1970s, school education had been on the *state* list, which meant that states had the final say in the management of their respective school systems. However, in 1976, education was transferred to the *concurrent* list through a constitutional amendment, the objective being to promote meaningful educational partnerships between the central and state governments. Today, the central government establishes broad education policies for school curricula development and management practices. These serve as guidelines for the states.

Education policies

National policies are evolved through a mechanism of extensive consultations, in which all the states and union territories actively participate. Periodically, the central/state governments appoint commissions and committees to examine various aspects of education. In addition, country-wide debate takes place on various educational issues. The recommendations of various commissions, committees and national seminars, and the consensus that emerges during these national debates, form the basis for India's education policies. During the post-independence period, a major concern of the Government of India and of the states was education as a factor vital to national development. In this context, India's educational reconstruction problems have been periodically reviewed by several commissions and committees. Their deliberations, recommendations and reports have formed the basis for the 1968 National Policy on Education (NPE) and the National Policy on Education Resolution of 1986.

The impact of national debates on curriculum

In 1986, extensive deliberations by various national committees on the country's education system and policy culminated with the decision for a national curricular framework containing a *common core* along with *flexible components*. The common core includes the history of In-

dia's freedom movement; constitutional obligations and other content essential to nurture national identity. These core elements are intended to cut across subject areas and were designed to promote a number of values (such as India's cultural heritage, egalitarianism, democracy, and secularism, equality of the sexes, protection of the environment, removal of social barriers, observance of the small-family norm and inculcation of the scientific approach). Also, in order to reinforce the view that the whole world is one family, the curriculum would have the objective to promote international co-operation and peaceful co-existence.

With regard to re-orientation of educational content and processes, the NPE emphasized the need for bridging the schism between the formal education system and the country's rich and varied cultural traditions. To this end, the preoccupation with modern technologies must not be allowed to sever new generations' ties to India's history and culture. In view of the growing concern over the erosion of essential values and increasing cynicism in society, readjustments in the curriculum are to be carried out so that education becomes a forceful tool for the cultivation of social and moral values. The policy further emphasized the integral role that manual work, sports and physical education should play in the learning process and the need to strengthen science and mathematics education.

THE CURRICULUM DEVELOPMENT PROCESS

The process of curriculum development in India lies between the two extremes of centralization and decentralization. From time to time, the national government formulates the National Policy on Education which includes broad guidelines regarding content and process of education at different stages. These guidelines are further elaborated by the National Council of Educational Research and Training (NCERT).

Using as its foundation the NPEs of 1968 and 1986, two curriculum initiatives have been launched by NCERT: (a) The Curriculum for the Ten-Year School—a framework (1975); and (b) The National Curriculum for Elementary and Secondary Education—a framework (1988). The curriculum framework prepared at the central level provides a broad overview of the school curriculum, including general objectives, subject-wise objectives, suggested scheme of studies, and guidelines for the transaction of the curriculum and the evaluation of pupil outcomes. These detailed curricula, syllabi and instructional materials are developed at the national level. The NCERT has also developed the syllabi and instructional materials used in the schools run by central organizations.

However, the states consider whether to *adopt* or *adapt* the NCERT syllabi and instructional materials. Thus, the NCERT curriculum framework is always *a suggestion* rather than *prescriptive* and it is not enforceable by law in the states. However, it is readily accepted by the states because of the NCERT's credibility and the participatory development approach it follows. (The NCERT curriculum framework is developed on a consensus basis; all the states and union territories are involved in the curriculum elaboration).

The National Curriculum

The following social, cultural, political, economic and educational parameters have guided the development of the national curriculum framework:

- All citizens of India should have equal access to education. The specific needs of the disadvantaged sections of the society ought to be met through the curriculum;
- Education regarding India's cultural heritage needs to be imparted to students in order to develop national identity and a spirit of togetherness;
- It is essential to impart knowledge of the citizens' duties and rights, and ideals of the Constitution of India to children;
- In view of the erosion of values, it is imperative through the curriculum to inculcate moral and social values amongst students;
- Besides national identity and unity, it is also imperative to develop international understanding through the curriculum;
- Protection of the environment and conservation of natural resources should be major objectives of school curriculum;
- In view of the increasing population of the country, it is imperative to include suitable content relating to population education in the syllabi of different subjects;
- The curriculum should aim at preparing a child for life, which means that relevant knowledge should be imparted and appropriate skills, competencies and values developed;
- Education plays a significant role in national development by increasing human resources. Therefore, the primary objective of the curriculum ought to be total development of the child's personality;
- All the processes of education should be child-centred, with the teacher playing the role of a facilitator during the process of learning;
- The curriculum should aim at developing students' creative potential;
- The curriculum should develop a scientific approach amongst students;
- Work should not be considered as distinct from education. Instead , work should be adopted as a medium for imparting education;
- The process of evaluation should be continuous and comprehensive;
- Media and educational technology ought to be employed to make the transactions of curriculum effective.

An important development since the National Policy on Education was formulated in 1986 has been the acceptance across the country of a common structure of education and the introduction by most states of the 10+2+3 system. There are eight years of elementary education (five years of primary school and three years of upper primary/middle schooling) and four years of secondary education (two years of general secondary and two years of higher secondary).

The education system seeks to give due recognition and importance to the social organization, traditions, customs and value systems of the various communities, particularly Scheduled Castes and Scheduled Tribes. This is supported among other ways by the development of materials and curricula in their languages.

The main characteristics of the national curriculum, developed in accordance with the above-mentioned principles, are described in the following sections.

General education

The national curriculum envisages the first ten years of school as the period of general education and that the diversified curriculum should be introduced at the end of general education (i.e. at the beginning of the senior secondary stage.) This plan provides all students with an opportunity to receive instruction in each of the curricular areas considered essential for their overall development.

Undifferentiated curricula

The national curriculum framework also envisages an undifferentiated curriculum for all children - irrespective of sex and place of residence (i.e. urban or rural).

Minimum levels of learning

The 1986 NPE recommended the establishment of minimum levels of learning (MLLs) for the various subject areas at the different school stages. In this context, a Government of India committee (under the Chairmanship of Professor R.H. Dave) elaborated the MLL curriculum concept that designates the *competencies* to be mastered by the primary level pupils in each *subject*, at *specific points in time*. For the first five years of primary schooling, the MLL covers the mother tongue, mathematics, social science and science. The MLL approach implies that the teacher's responsibility is not confined to syllabus coverage. Rather, teachers must be responsible for their pupils mastering designated competencies. This approach has necessitated on-going development of MLL-based textbooks and MLL-based evaluation. It has also introduced a higher concept of *teacher accountability*. Teachers are now held responsible for pupil competency development and not merely for teaching the prescribed syllabus—as was the previous practice.

Common-core elements

The 1988 National Curriculum Framework (NCF) recommended compulsory core curriculum elements to be taught throughout the country. Most of these core elements are aimed at the development of national identity and a spirit of togetherness leading to national unity. The common core elements recommended in the NCF are: the history of India's freedom struggle; constitutional obligations; content essential for the development of national identity; common cultural heritage of India; democracy, secularism, socialism; gender equality; environmental conservation; removal of social barriers; the small-family norm; and development of a scientific approach. The core elements are not to be treated as separate subject areas. Rather, the content is to be interwoven into the different subject areas. Here, it should be noted that, for the first time during India's post-independence period, conscious efforts have been made to place *values* at the centre stage of curriculum.

Continuous and comprehensive evaluation

The NCF also considered the limitations of the existing evaluation system, which relies mostly on one-shot, end-of-the-year impact evaluation. This annual examination measures skills attainment and the affective domain is generally ignored (i.e. attitudes development). To remedy this, the NCF recommended that evaluation should be treated as an integral part of the classroom teaching/learning process. Furthermore, evaluation, conducted periodically, should provide the type of feedback on student achievement that enables teachers to improve their methodology, if required.

Interactive teaching

It is recognized that both the educational curriculum content and process must be re-oriented in order to bring about overall quality improvement. During the past few years, successful attempts have been made to re-orient the educational content to current development and demands of both society and the different disciplines. However, this initiative has not been accompanied by a corresponding change in the modes of curriculum transaction, which remains predominantly one of verbal exposition by the teacher. The expository style of teaching, involving mostly one-way communication, puts the learner in the role of a passive recipient—a mere *object* of education. This situation is not conducive to the development of creative, critical and analytical thinking by students. An interactive teaching methodology involving continuing dialogue between the teacher and pupils (discussion, investigation, problem-solving, etc.) could provide an educational environment more conducive to developing certain abstract cognitive skills.

Scheme of studies

The 1988 National Curriculum Framework has recommended the areas shown in Table 1, along with the appropriate time weightage at the upper primary and secondary levels:

Languages. The NCF envisages the study of three languages at the upper primary and secondary stages: first, the mother tongue/regional language; second, Hindi or English (in the case of non-Hindi-speaking states); and third, one of the modern Indian languages (English in Hindi-speaking states; Hindi *or* English in non-Hindi-speaking states).

Mathematics. Functional mathematics are taught at the upper primary stage; arithmetic, including commercial mathematics, should be completed, to a very large extent, by the end of the upper primary stage. The secondary stage begins the transition from functional mathematics to the study of mathematics as a discipline.

TABLE 1. The National Curriculum Framework

	Upper primary stage	Time weightage (%)
1.	Three languages	32
2.	Mathematics	12
3.	Social science	12
4.	Science	12
5.	Health and physical education	10
6.	Arts	10
7.	Work experience	10
	Secondary stage	
1.	Three languages	30
2.	Mathematics	13
3.	Social science	13
4.	Science	13
5.	Work experience	13
6.	Health and physical education	9
7.	Arts	9

Science. The upper primary science teaching objectives are to develop an understanding of the nature of scientific knowledge; and certain physical, chemical, biological principles and their relationship to the operation of scientific principles in nature, as well as in daily life. The aim of the teaching of science at the secondary level is focused on problem-solving and decision making through the learning of key concepts, which cut across all the science disciplines.

Social sciences. The study of social sciences at the upper primary stage is comprized of the study of history, geography, civics and contemporary issues and problems. At the secondary stage, it incorporates elements of history, geography, civics and economics to promote an understanding of contemporary India.

Arts. The aim of art education is learner sensitization to the beauty in line, colour, form, movement and sound. The upper primary programme incorporates: (i) drawing, painting, printing, collage, clay modelling, puppet construction; (ii) free expression artistic creation; (iii) handling of simple musical instruments; (iv) movement, mime, simple dance forms, community singing; (v) simple concepts of visual and performing arts; (vi) stories of great personalities in the field of arts, and stories connected with other countries. At the secondary stage, it incorporates: (i) study and exploration of visual and aural resources; (ii) projects leading to creative visual and aural forms; (iii) inter-group, inter-school art activities; (iv) study groups, interaction with community artists; (v) exploration of community/neighbourhood traditional art forms.

Health and physical education. This area focuses on the holistic health of the learner and the community, thereby establishing the important place of mental and emotional, as well as physical health. The first ten years of content focuses on general promotion of healthful living as well as on major health problems of the country. In physical education, sports and games, the emphasis is given to indigenous traditional games. Furthermore, as a system which promotes the integral development of body and mind, yoga receives special attention.

Morals and values. These areas are treated as an integral curriculum component for which all teachers are responsible.

Work experience. The work experience incorporates purposive, manual work resulting in either goods or services useful to the community. It is an essential component at all stages of education and is to be provided through well-structured, graded programmes. At both the upper primary and secondary stages, work experience emphasizes agricultural and technological processes to facilitate the integration of science, mathematics and technology into community life.

State-level curriculum implementation

The available feedback from the states indicates that, for the most part, they have revised their curricula along the lines recommended by the 1986 NPE and 1988 NCF. However, several have made adjustments that respond to specific local needs or socio-political pressures. Following are some highlights that reflect the dynamics of curriculum implementation at the state level.

Languages

All states (except Tamil Nadu) have adopted the three-language formula. Although it was envisaged that only one language (mother tongue or regional language) would be taught at the primary stage, many states have taken the initiative and introduced a second and third language at this level. For example, Punjab state recently decided to introduce English, along with the regional language in class I. In the state of Sikkim, English is taught as a subject and used as the medium of instruction—beginning right from class I. The policy of using English as the medium of instruction beginning in class I is being implemented in almost all the private, unaided schools throughout the country. (The growth of these private schools has mushroomed during the past few years and this trend is likely to accelerate in the future.)

Another interesting variation encompasses classical language teaching—an area that the NCF did not address. Most of the Hindi-speaking states, and even central school organizations, have made provisions for teaching Sanskrit as a third language. In fact, to accommodate the study of Sanskrit along with other languages, some states have even made provisions for the teaching of a fourth language. (In Uttar Pradesh, Sanskrit is compulsory and taught as part of Hindi.) It would appear that Sanskrit is in demand because it is associated with ancient Indian culture and is the mother to many modern Indian languages.

Other scholastic areas

Several states have modified the NCF science and social sciences recommendations. For example, in place of the integrated science approach, they have opted for the single-subject discipline approach. West Bengal has made provisions for the teaching of history and geography only at the upper primary stage.

Non-scholastic areas

In India, work experience, arts, and health and physical education are generally categorized as non-scholastic areas. The curriculum framework has emphasized that these areas are essential for all around development of the child's personality. However, being non-examination subjects, these areas are not taken seriously by the teachers and students. In some states, arts has not been made a compulsory subject at the secondary stage. In the states and schools where arts is a compulsory or optional area, only the visual arts are taught. Performance arts like music and dance are taught only in a limited number of schools. In the states of Punjab, Haryana and Himachal Pradesh, arts has been clustered with home science and agriculture and the students have been given the option to choose any one of these areas.

Values education

The NCF also envisaged that values education should permeate all aspects of school life and, therefore, should be integrated into all the curriculum areas. However, states like Haryana, Goa, Himachal Pradesh, Karnataka, Punjab, Sikkim, Tamil Nadu, Andhra Pradesh and Uttar Pradesh have all introduced moral education or moral science as independent subject areas, with distinct time allocations. Apparently, this has occurred in the light of pleas that, given the progressive weakening of the moral fabric of society, the integrated approach does not provide values education with the prominent place it deserves.

Competency-based textbooks

After the identification of MLL (minimum levels of learning), introductory advocacy programmes were launched to promote the concept as an approach to curriculum development, teaching and learning and pupil evaluation. A number of states have since produced primary-stage competency-based textbooks in different curricular areas.

CURRICULUM OUTCOMES

The curriculum review

The Government of India found it necessary to appoint a National Advisory Committee (NAC) to look into frequent complaints about the *excessive burden* of the curriculum on children. The NAC submitted report findings in 1993. This report, which took note of the widespread perception regarding the heavy load of the school curriculum, also identified the roots of the problem: inability to distinguish between information and knowledge; society's competitive social ethos; the desire to catch up with developed countries; centralized curriculum development processes; non-participation of teachers in the various curriculum development processes; excessive dependence on experts; incomprehensibility of textbooks; and absence of an academic ethos in schools. The committee further determined that the academic burden perception is tied to *incomprehension*, a problem which can be addressed (to some extent) by modifying the curriculum development goals, as well as the textbook writing process and by improving the school environment by providing the required infrastructure.

Most of the NAC recommendations were accepted by the Government. All state governments were asked to initiate appropriate follow-up measures to implement the recommendations of the committee, including review of curriculum and textbooks.

Evaluation of textbooks

The textbooks used in different states and union territories are already subject to periodic evaluation. They are reviewed from the perspective of national integration—the objective being to promote peace and harmony in the country and enable children to learn to live together with people of different religious, linguistic, ethnic and cultural groups. During these reviews any content deemed to have a secular bias or to be destructive to national unity is identified and recommended for removal. Textbooks are also continuously evaluated from the standpoint of gender, scientific temper and relevance, etc.

Improving quality of curriculum transaction

NCERT, the Central Board of Secondary Education (CBSE), the State Councils of Educational Research and Training (SCERTS) and the State Boards of Secondary Education have initiated a number of projects to improve the quality of curriculum transmission in schools. To improve the quality of mathematics education, CBSE has launched the project Operation Mathematics emphasizing the re-orientation of all teachers. The CBSE has also developed source materials in the education areas of: environment, values, consumer and population. Furthermore, a network of training institutions has been established in the country to enhance teacher competencies through in-service education.

Emerging trends in curriculum development

In the light of changing societal needs and aspirations, certain high demand-driven areas are likely to have an impact on the school curriculum. It appears that, among other areas, language education, values education and information technology shall be matters of serious debate in the next cycle of curriculum renewal. Art education is also scheduled for reform in the next cycle of curriculum renewal.

Language education. The introduction of English at the primary stage is one of the demands which school systems are finding difficult to resist. Perhaps this demand is based on the assumption that the study of English can give children an edge in a highly competitive society.

Values education. After the establishment of a National Commission for Human Rights, momentum has been gathering for incorporating this area into the school curriculum. The interim report issued by Justice Verma's Committee (on the fundamental duties of citizens) strongly recommended that fundamental duties should be incorporated at all stages of the school curriculum, as well as into different teacher-education programmes. The incorporation of human rights and citizens' fundamental duties into the curriculum can help pupils *learn to live together*, one of the four pillars of learning identified by the International Commission on Education in the Twenty-first Century.

Computer education is expected to soon occupy a prominent space in India's school curriculum, it being recognized that, in the information age, skills in the use of these technologies are invaluable.

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Indonesia

Goals and objectives of education

Estimated population (1995)	197,500,000
Public expenditure on education as percentage of Gross National Product (1995)	1.4
Duration of compulsory education (years)	6
Primary or basic education	
Pupils enrolled (1995)	29,721,859
Teachers (1995)	131,157
Pupil/teacher ratio	23:1
Gross enrolment ratio (1995)	
—Total	114
—Male	117
—Female	112
Net enrolment ratio (1995)	
—Total	97
—Male	99
—Female	95
Estimated percentage of repeaters (1995)	8
Estimated percentage of drop-outs (1995)	10
School-age population out of school (1995)	800,000
Secondary education	
Students enrolled (1995)	12,200,000
Gross enrolment ratio (1995)	
—Total	48
—Male	52
—Female	44
Third-level enrolment ratio (1995)	11.1
Estimated adult literacy rate (1995)	
—Total	84
—Male	90
—Female	78

Source: UNESCO statistical yearbook, 1998, Paris.

According to Law No. 2/1989, the objectives of the national education system are:

- to develop citizens whose values are based on *Pancasila* (i.e. State ideology, spelled out in the five basic principles of the Republic of Indonesia: belief in one God; just and civilized humanity, including tolerance to all people; the unity of Indonesia; democracy led by wisdom of deliberation among representatives of the people; and social justice for all);
- to support the Indonesian society, people and State.

In the broad context of society and national development, the aim of education is, on the one hand, to maintain Indonesia's cultural background and, on the other, to generate the knowledge, skills and scientific progress that will keep the nation abreast of development in the twenty-first century. National education should improve the life of the nation and develop the Indonesian people fully (i.e. intellectually, morally, spiritually, physically and socially).

THE ADMINISTRATIVE STRUCTURE OF CURRICULUM DEVELOPMENT

The Centre for Curriculum and Educational Facilities Development—or Curriculum Development Centre (CDC)—established in 1969, comes under the authority of the Office of Educational and Cultural Research and Development in the Ministry of Education and Culture. It is composed of four divisions each headed by a director: (a) Pre-school, primary and special education; (b) Secondary schools; (c) Higher education; (d) Educational facilities. The Centre's main functions are: (a) to formulate technical policies on curriculum development and educational facilities; (b) to conduct, co-ordinate and guide the development of curriculum and educational facilities covering institutional objectives, programme structure and basic course outline, teaching learning models and methods; learning materials, etc.; and (c) to formulate suggestions on government policy.

The CDC has established a curriculum network to strengthen professional support for teachers across the country in the area of curriculum development. The network was established in order: (a) to involve different regions in the development of a national curriculum; (b) to improve the level of professionalism in curriculum development at the various levels (national, provincial, district); and (c) to establish a mechanism for curriculum

dissemination and development at both national and provincial levels. The network includes professional groups from twenty-seven provinces across the country, each consisting of thirty-five members including leading teachers from primary, junior and senior secondary schools, vocational schools, principals, supervisors and staff from the Regional Office of Education and Culture. The network's tasks are: to plan, develop and implement the curriculum according to local conditions and needs; to assist teachers in curriculum development through adjustments, elaboration and analysis based on the students' immediate environment and community needs and resources; and to monitor and evaluate the implementation of both national and local content. The CDC provides advice, assistance and guidance to the network in the elaboration, analysis, monitoring and evaluation of curricula. Some of the accomplishments of the network include: the development and implementation of local content materials (course outlines, teaching guides; assessment guides and counselling guides); analysis and modification of the basic course outline; monitoring and evaluation, including development of instruments for the process, and preparation of a report. It is intended to set up networks at the district level, intensify training for network groups at both provincial and district levels, increase production of materials, and improve monitoring and evaluation techniques.

ON-GOING CURRICULUM REFORM

The existing curriculum designed in 1994 was felt to be inadequate in a number of ways: overloaded; too difficult for the pupils to complete; inadequate attention paid to the importance of the natural and social environments; failure to incorporate new areas of content, including education for human rights, moral education, health and nutrition education; and the need to update the content on Indonesian history.

Public hearings were held to find out pubic opinion concerning curriculum needs. Relevant recent research on the curriculum, especially as related to future needs, was taken into account. An analysis was made of the gaps between the existing curriculum as it was formulated and designed and as it has been implemented. A working team has been set up consisting of staff from universities and teacher training institutions, experienced teachers and relevant experts.

Current curriculum-related priorities and concerns

Major goals include the expansion of compulsory basic education from six to nine years, the improvement of the quality of primary and secondary education, and enhancing learning achievements for all levels. Indonesia's commitment to the further development of education is based on the recognition that development goes hand-in-hand with advancement in science and technology.

The continuous decrease of employment opportunities in the area of agriculture and the increasing demand for knowledge and skills in industry, especially in the high technology and service sectors, as well as the inevitable impact of globalization, have created an urgent need for on-going curriculum reform. In addition to developing students' intellectual capacities, it is recognized that education must foster and promote creativity, the ability to process and utilize information, adaptability and self-training.

Indonesia has recently entered the *Second Twenty-five Year Long-term Development Plan – PJP II* (1994–95 to 2018–19), the emphasis of which is on the development of human resources to sustain the economic evolution of the nation. To respond to the challenges of modernity, the priorities of education for PJP II include the following:

- the completion of the **nine-year universal basic education programme** (which involves adding three years of schooling for those of 12-15 years of age, i.e. at least six years of primary education and three years of lower secondary or equivalent education). The curriculum of the junior secondary school is also to be expanded with skills training, especially for students who are not able to continue to senior secondary education. The implementation of the nine-year basic education programme will cover efforts to develop an improved learning environment at school and in classrooms; efforts to provide and train more teachers; and efforts to provide quality equipment and textbooks.
- **the relevance of education to development**. The policy states that education should be related to industry and the business world starting from planning, implementation, assessment, and certification of education and vocational training relevant to economic needs. It requires the expansion and improvement of technical and vocational education for the production of skilled and flexible human resources who master technology. The 'link and match' programme, which involves industry and commerce in vocational education, will continue to be developed and implemented through the dual system. To support the policy, 2,000 commercial and small industrial institutes have been contacted for co-operation and asked to provide training for students. The co-operation includes curriculum development and an examination system that measures the skills and expertise of the participant after completing a certain level.
- **improved capacity to master science and technology** through improved quality of higher education providing training and research, supported by improvements in mathematics and science instruction within the overall education system. Educational programmes, as preparation for employment, are provided through the junior secondary schools with qualified educational content and through vocational secondary education. At pre-tertiary level, science and technology programmes include: (i) science and technology for basic education directed towards general basic comprehension and aiming to implant and develop basic learning tools—this covers mastery in reading, arithmetic, problem solving, and moral education for the industrial society (discipline, time appreciation, work ethics, self-learning); and (ii) sec-

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ondary education programmes aiming to master the basics of science and technology.
- the development of a **monitoring and evaluation system** of education that is valid, reliable and continuously comprehensive.

PRIMARY AND JUNIOR SECONDARY EDUCATION (BASIC EDUCATION)

Six years of compulsory education for primary school-age children (PS, 7-12 years) were institutionalized in 1984. Currently (as from 1994) the programme has been extended to the 13-15 years age group (i.e. junior secondary school—JSS). The policy has been recognized as nine-year compulsory basic education. The major purpose of the extension is to alleviate the problem of child labour and to keep children in school up to the point where they are able to keep up with the changing demands of society, especially those who cannot afford to pursue a higher level of education.

In addition to primary and junior secondary education, there is also an Islamic primary school administered by the Ministry of Religious Affairs: the Islamic primary school (*Madrasah Ibtidaiyah*), equivalent to primary school, and the Islamic junior secondary school (*Madrasah Tsanawiyah*), equivalent to junior secondary school.

Primary education provides general education. The goal of basic education is to develop the lives of children as individuals and members of society, citizens and members of mankind, as well as to prepare them to pursue their studies in secondary education. The core content of the basic education curriculum consists of: *Pancasila*, religion, civic education, Indonesian language, reading and writing, mathematics, introduction to sciences and technology, geography, national and general history, handicraft and arts, sports and health education, drawing, English language, and local content areas. More than one element may be joined in one subject matter; or, *vice versa*, one element may be divided into more than one subject. The 1994 basic education curriculum was implemented in phases until the end of the 1996-97 academic year. The average number of weekly periods of teaching by subject are indicated in Table 1 below.

TABLE 1. Basic education curriculum (primary and junior secondary school)

Subjects	Number of weekly periods in each grade								
	Primary						Junior secondary		
	1st	2nd	3rd	4th	5th	6th	1st	2nd	3rd
Pancasila education	2	2	2	2	2	2	2	2	2
Religion	2	2	2	2	2	2	2	2	2
Indonesian language	10	10	10	8	8	8	6	6	6
Mathematics	10	10	10	8	8	8	6	6	6
Sciences	–	–	3	6	6	6	6	6	6
Social sciences	–	–	3	5	5	5	6	6	6
Handicraft and arts	2	2	2	2	2	2	2	2	2
Health and sport	2	2	2	2	2	2	2	2	2
English language	–	–	–	–	–	–	4	4	4
Local content	2	2	4	5	7	7	6	6	6
TOTAL PERIODS	30	30	38	40	42	42	42	42	42

Source: Basic Education Curriculum, MOEC, 1993; (the average length of teaching periods is 30 minutes in grades 1-2 and 40 minutes in grades 3 to 6 of primary education; 45 minutes in junior secondary).

As part of the expansion of educational opportunities at the basic education level and within the initial stage of the nine-year basic education programme, JSS education was developed. However, the number of PS students continuing to JSS has remained low. By intensifying the JSS expansion, it is hoped that within fifteen years, all 13 million of PS graduates will have the opportunity to continue to the JSS. The JSS expansion will be supported by the building of new schools, hiring new teachers, developing more infrastructures and facilities and by the development of the open junior secondary school programme for 13-15-year-old children who are not able to follow the regular JSS.

SECONDARY EDUCATION

Secondary education lasts three years and is available to graduates of basic education. The types of secondary education include: *general secondary education*, which gives priority to expanding knowledge, developing students' skills and preparing them to continue their studies to the higher level of education; *vocational secondary education*, which gives priority to expanding specific occupational skills and emphasizes the preparation of students to enter the world of work and expanding their professional aptitudes; *religious secondary education*, which gives priority to the mastery of religious knowledge; and *service*

secondary education, which emphasizes the training of service tasks for civil servants or candidates for civil service.

General secondary education includes general secondary school and Islamic senior secondary school. It is intended to develop the student's knowledge in accordance with the progress of science, technology and the arts, and enable him/her to continue studies at higher levels of education. It also develops the student's abilities as a member of the community to interact with the social, cultural and natural environment.

General secondary education consists of general and specific teaching programmes. The general education programme is implemented in the first and second grades, while the specific teaching programme starts to be implemented in the third grade. The new curriculum has been implemented in phases, and was extended to all grades in 1996–97. Quality has been improved by introducing a quarter-year academic cycle (instead of the half-year/semester), and a students' streaming division (by discipline) at grade 3 (instead of grade 2). The average number of weekly 45-minute periods of teaching by subject are indicated in Table 2 below.

The vocational secondary education programmes are classified into six different groups of vocational fields, namely: Agriculture and Forestry; Technology and Industry; Business and Management; Community Welfare; Tourism; and Arts and Handicraft. Implementation of vocational education is based on the national curriculum. It is adjusted to the local and environmental needs and distinctive features of the vocational education concerned. The curriculum of vocational secondary school consists of general and vocational education programmes.

The quality of vocational education still needs to be improved, its scope expanded and its programmes matched to the employment needs.

METHODS AND APPROACHES TO LEARNING

The learning and teaching climate should generate self-confidence, innovative thinking, and should be orientation towards the future. Child-centred, active and co-operative learning is advocated. Teaching is expected to promote higher learning skills, fostering the students' desire and capacity for learning throughout life.

Four types of assessment exist at pre-university level:

1. *Classroom-based continuous assessment* with directions and guidelines provided to teachers on assessment procedures. Assessment may take place after the completion of a small teaching unit at the end of every quarter or semester, or at the end of an academic year.
2. *External assessment* consisting of a school leaving examination at the end of each school level.
3. *A survey of student achievement* involving a sample of a student's performance and other relevant variables to be conducted periodically. At present, surveys conducted are not professionally designed and the instruments tend to be of poor quality. A National Assessment Programme is foreseen.
4. *University entrance examination*. These examinations tend to be very difficult due to the interests of top universities to select the best candidates. Many teachers in senior secondary school focus on preparing students for these exams rather than on the prescribed secondary school curriculum. Students who have a consistently high performance during senior secondary school may be exempted from the examination.

MAIN CHALLENGES FACING CURRICULAR ADAPTATION

Design

- Divergence of opinion with regard to educational philosophy among key stake holders.
- Determining needs for the social, economic, political and cultural environment of the twenty-first century.
- Determining the aims of different levels and types of education.
- Defining minimum basic learning competencies for all levels and types of education.

Implementation

- The vast size of Indonesia makes effective country-wide curriculum implementation very difficult.
- The budget for proper piloting of the new curriculum is inadequate.
- The need for comprehensive reform incorporating all aspects of the teaching/learning process: teachers, materials and facilities, role of society.

Follow-up

- Socialization of the process in schools.
- Modification following trialling.
- Full-scale implementation following piloting.

TABLE 2. General senior secondary school curriculum

Subjects	Number of weekly periods in each grade				
	General		Specialist		
	Form 1	Form 2	Form 3		
			Language	Science	Social
A. General					
Pancasila education	2	2	2	2	2
Religion	2	2	2	2	2
Indonesian language and literature	5	5	3	3	3
General and national history	2	2	2	2	2
English language	4	4	5	5	5
Sport and health	2	2	(2)	(2)	(2)
Mathematics	6	6	-	-	-
Sciences					
a. Physics	5	5	-	-	-
b. Biology	4	4	-	-	-
c. Chemistry	3	3	-	-	-
Social sciences					
a. Economics	3	3	-	-	-
b. Sociology	-	2	-	-	-
c. Geography	2	2	-	-	-
Arts	2	-	-	-	-
Sub-total	42	42	14(16)	14(16)	14(16)
B. Specialist					
Language					
Indonesian language and literature	-	-	8	-	-
English language	-	-	6	-	-
Foreign language(s)	-	-	9	-	-
History of culture	-	-	5	-	-
Sciences					
Physics	-	-	-	7	-
Biology	-	-	-	7	-
Chemistry	-	-	-	6	-
Mathematics	-	-	-	8	-
Social sciences					
Economics	-	-	-	-	10
Sociology	-	-	-	-	6
Civics	-	-	-	-	6
Anthropology	-	-	-	-	6
Sub-total			28	28	28
Total academic hours	42	42	42(44)	42(44)	42(44)

Source: MOEC, 1993; One teaching period lasts 45 minutes.

Malaysia

Curriculum planning, development and reform

Zamrus Bin A. Rahman and Mokelas Bin Ahmad

Estimated population (1995)	20,100,000
Public expenditure on education as percentage of Gross National Product (1995)	5.2
Duration of compulsory education (years)	11
Primary or basic education	
Pupils enrolled (1995)	3,100,000
Teachers (1995)	140,342
Pupil/teacher ratio	19:1
Gross enrolment ratio, (1995)	
—Total	92
—Male	92
—Female	92
Net enrolment ratio (1995)	
—Total	91
—Male	91
—Female	92
Estimated percentage of repeaters (1995)	–
Estimated percentage of drop-outs (1995)	6
School-age population out of school (1995)	280,000
Secondary education	
Students enrolled (1995)	1,640,461
Gross enrolment ratio (1995)	
—Total	62
—Male	58
—Female	66
Third-level enrolment ratio (1995)	10.6
Estimated adult literacy rate (1995)	
—Total	83
—Male	89
—Female	78

Source: UNESCO statistical yearbook, 1998. Paris.

INTRODUCTION

Legal foundation

The Education Act 1996 (Act 550, Laws of Malaysia) provides the fundamental basis for curriculum policies in Malaysia. It indicates the specific laws and provisions that give direction to curriculum documents. These regulations are mandatory for all schools.

Education goals and objectives

The country's educational goals are manifested in the Malaysian National Education Philosophy (NEP) which states that:

Education in Malaysia is an on-going effort towards further developing the potential of individuals in a holistic and integrated manner so as to produce individuals who are intellectually, spiritually, emotionally and physically balanced and harmonious, based on a firm belief in and devotion to God. Such an effort is designed to produce Malaysian citizens who are knowledgeable and competent, who possess high moral standards, and who are responsible and capable of achieving a high level of personal well-being, as well as being able to contribute to the betterment of the family, the society and the nation at large.

The education system

A uniform system of education in both primary and secondary schools has been established whereby a national curriculum is used in all schools. Common central assessment and examinations at the end of the respective periods of schooling are also being practised. The national language, Malay, is the official language of instruction.

Curriculum philosophy

The school curriculum is expected to contribute to the *holistic* development of the individual (mental, emotional, physical, spiritual) by imparting general knowledge and skills, fostering healthy attitudes and instilling accepted moral values. The aim is to produce Malaysian citizens who are balanced, trained, skilful and cherish the national aspiration for unity.

The general direction for on-going curriculum reform is to improve the quality of education in order to achieve the aims of the National Education Philosophy

(NEP). The NEP has been geared towards achieving the nation's vision to prepare children to become knowledgeable, trained and skilled individuals to meet the growing needs of the millennium. It is envisaged that this can be achieved by emphasizing science and technology, use of information technology, and inculcating good moral and work ethics suitable for the Information Age. The school curriculum is designed to achieve the intended learning outcomes for different ability levels.

CURRICULUM DESIGN

The national curriculum promotes unity through the use of a single medium of instruction (the national language) and the provision of the same core subjects for all pupils in all schools within the National Education System. However, the cultural diversity of different ethnic groups in Malaysia is preserved through the existence of National Type Schools, which are allowed to use other major ethnic languages as the medium of instruction.

The underlying theoretical principle of national curriculum formulation is that of general education, using an integrated approach in curriculum planning. The curriculum comprises content and skills, with emphasis on the development of basic skills, the acquisition of knowledge and thinking skills. Each subject must also incorporate the inculcation of moral values and attitudes and the correct use of Malay and other languages, such as English, Chinese and Tamil.

The integrated approach is the main focus in the design of the Integrated Curriculum for Primary School and Integrated Curriculum for Secondary School. The elements of knowledge, skills and values are incorporated so as to bring the integrated development of the intellectual, spiritual, emotional and physical aspects of the individual.

ORGANIZATIONAL STRUCTURE AND MECHANISMS OF CURRICULUM DEVELOPMENT

Malaysia's system of curriculum development is centralized. The Ministry of Education through its central agency, namely the Curriculum Development Centre (CDC), is responsible for initiating curriculum development. The CDC is responsible for the development of the pre-school, primary school and secondary school curriculum. In the implementation of the curriculum, however, various committees have been set up in the Ministry of Education, State Education Departments, Divisions/District Education Offices and schools.

1. *Educational Planning Committee.* (Secretariat: Educational Planning and Research Division, Ministry of Education.) Functions:

- to approve and formulate the major policies in the Ministry of Education;
- to consider all projects related to policy matters.

2. *Central Curriculum Committee.* (Secretariat: Central Curriculum Committee, Ministry of Education.) Functions:

- to formulate curriculum policies, as well as study their implications;
- to determine the direction of curriculum development and co-ordinate efforts to achieve this goal;
- to consider and make recommendations concerning education planning and implementation, as well as to present these findings to the Educational Planning Committee;
- to study the implications of curriculum programmes and to make decisions accordingly;
- to determine aspects which require research and study.

3. *Curriculum Implementation Committee.* (Secretariat: Central Curriculum Committee, Ministry of Education.) Functions:

- responsible for co-ordinating all levels of preparation in implementing any curriculum programmes approved by the Central Curriculum Committee;
- to ensure co-ordination between the divisions of the Ministry and the State Education Departments in the implementation of the curriculum;
- to gather feedback on curriculum implementation at the State, division/district and school levels;
- to organize forums to discuss successful innovative programmes implemented at the State level.

4. *State Curriculum Committee.* Functions:

- to monitor, assess and guide principals, headmasters and teachers in the implementation of the curriculum;
- to gather and analyze information and take the necessary follow-up action;
- to co-ordinate the implementation of activities between policy makers and implementers at the Ministry, division/district and school levels;
- to co-ordinate the use of resources for curriculum implementation;
- to plan, manage and co-ordinate courses organized for teachers by the State Education Department;
- to plan, manage and implement innovative projects;
- to improve professionalism among teachers.

5. *Division/District Curriculum Committee.* Functions:

- to plan activities and curriculum implementation strategies at division/district levels;
- to arrange and organize courses and seminars to disseminate the latest information to teachers and all personnel concerned;
- to advise and guide teachers in curriculum implementation;
- to monitor, supervise and evaluate the implementation of the curriculum;
- to provide feedback to the higher authorities on the implementation of the curriculum;
- to plan, manage and implement innovative projects at the division/district levels.

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6. *School Curriculum Committee*. Functions:

- to plan, organize and evaluate teaching/learning activities in schools;
- to work towards increasing the knowledge and competence of teachers and students;
- to study the suitability of the subject content and inform parties concerned;
- to study, evaluate and determine the suitability of textbooks or other materials;
- to assess the scheme of work;
- to assess pupil performance and to identify follow-up action;
- to plan and conduct in-house training programmes for all teachers;
- to disseminate information to all teachers on the latest progress and development in education;
- to produce more educational resource materials in schools;
- to identify suitability of educational electronic media programmes in teaching-learning activities;
- to co-operate in the on-going assessment in schools;
- to co-ordinate additional learning activities.

ASSESSMENT AND EVALUATION

Centralized examinations are held at the end of Year VI, Form III and Form V. The results of these examinations are used to evaluate the effectiveness of the curriculum. Examination results also provide feedback to the planners to improve students' achievement. Based on the analysis of students' scores by items, their achievement in the various skills can be inferred. Should the performance drop below the expected standard, related divisions of the Ministry look into the problem and take prompt action to improve students' future achievement.

The various divisions of the Ministry also carry out related studies to find out the impact of the curriculum on students' achievement. These focus on specific areas of interest, and information is commonly collected using surveys, class observations or test items. Information obtained reflects the effectiveness of the curriculum and the Ministry is required from time to time to take follow-up action, such as reviewing the syllabus, textbooks and other teaching materials, and improving teacher/learning strategies.

CONCLUSION

Careful planning is necessary to ensure the implementation of the curriculum. Thus, the school plays an important role in creating a conducive environment encouraging excellence. In this respect, headmasters and teachers need to understand and internalize the National Education Philosophy, the aims and objectives of the National Education Policy and the integrated approach of the curriculum. Apart from the school and parents, society also plays an important role. The success of the curriculum depends on society's support in assisting the school to develop pupils' personalities and to participate actively in matters relating to education.

Maldives

Education policies, curriculum design and implementation at the level of upper primary and general secondary education

Abdul Muhsin Mohamed and Maryam Azra Ahmed

Estimated population (1995)	200,000
Public expenditure on education as percentage of Gross National Product (1995)	6.4
Duration of compulsory education (years)	–
Primary or basic education	
Pupils enrolled (1995)	50,733
Teachers (1995)	–
Pupil/teacher ratio	31:1
Gross enrolment ratio (1995)	
—Total	133
—Male	135
—Female	130
Net enrolment ratio (1995)	
—Total	100
—Male	100
—Female	100
Estimated percentage of repeaters (1992)[1]	18
Estimated percentage of drop-outs (1995)	7
School-age population out of school (1995)	0
Secondary education	
Students enrolled (1995)	40,000
Gross enrolment ratio (1995)	
—Total	49
—Male	49
—Female	49
Third-level enrolment ratio (1995)	–
Estimated adult literacy rate (1995)	
—Total	93
—Male	93
—Female	93

Notes:
1. Last year available

Source: UNESCO statistical yearbook, 1998. Paris

INTRODUCTION

The Republic of Maldives is an archipelago of approximately 1,190 coral islands located south-west of the Indian sub-continent. The islands form twenty-six natural atolls, which are grouped into twenty atolls for administrative purposes. The total population of the Maldives is around 250,000. The population is dispersed among 200 inhabited islands, with 90% of them having a population of less than 1,000. Around 25% of the population is concentrated in the capital, Malé.

HISTORICAL REVIEW OF EDUCATION IN THE MALDIVES

The system of education prevailing in the Maldives today has its roots in a traditional system of schooling that has existed for hundreds of years. These traditional schools, known as *edhuruge, makthab or madhrasa,* are privately owned or operated by the island communities and are usually self-financing. The *edhuruge* is a gathering of children in a private home with the objective of teaching them to read the Quran, to read and write Dhivehi, the mother tongue of Maldivians, and to provide some rudiments of arithmetic. The *edhuruge* is more formal and offers almost the same curriculum, while in the *madhrasa* the curriculum is more far-ranging. These schools have contributed towards achieving many educational objectives, including a high rate of literacy and the preservation of national culture and tradition (Ministry of Education, 1992). However, the present system of education is the result of a merger between the traditional system of schooling and a Western style of schooling introduced since 1960.

The Western style of schooling was introduced in English-medium schools in the capital Malé as part of a conscious effort to prepare individuals for training that they would receive overseas in order to meet the increasing developmental needs of the country. Thus, the beginning of a public school system was patterned after the British system in terms of organization of curriculum and methods of instruction.

One of the most significant historical developments in education was in 1978 with the decision to unify the national education system. Under this system, schooling in the Maldives was structured on a 5-2-3-2 cycle—five years of primary schooling leading to two years at the middle school level followed by three years of junior secondary school studies and two years of senior secondary

school studies. At the end of the 3-year junior secondary cycle and the 2-year junior secondary cycle students sit the London EDEXCEL GCE Ordinary-level and Advanced-level examinations respectively.

THE NATIONAL CURRICULUM

In January 1980, the Ministry of Education (MOE) introduced the first five-year primary curriculum. In 1982, a workshop was held to review this curriculum and to produce another one for the middle-school level. The resulting revisions and re-orientation of the primary curriculum led to the introduction of the first National Curriculum (NC) in 1984.

The NC in Maldives covers the primary and middle school cycles in all subject areas. The secondary curriculum content is designed around the O-level and A-level examinations offered by EDEXCEL. However, in the case of Islamic studies, the Dhivehi language and fisheries science, the curricula are designed locally—even for the secondary levels.

EDUCATIONAL GOALS AND OBJECTIVES FOR MALDIVES

1. The goals[1] of education follow from the national development goals. They are:

(a) to develop capable individuals with useful occupational skills, knowledge and attitudes for national development with a sense of dignity about labour, and for preserving the nation's environmental resources.

(b) to promote social justice and equity by ensuring universal primary education and equal educational opportunity for all citizens.

(c) to develop, within an education system based on the principles of Islam, an awareness among all citizens that, as members of the nation, they are also part of the Muslim Ummah.

(d) to promote in individuals a spirit of independence and self-reliance such that they may seek to enhance the quality of life by discovering ways and means of improving their own health, nutrition, and well-being.

(e) to strengthen national consciousness, and to preserve the nation's cultural heritage by promoting desirable cultural values, traditions and the national language.

(f) to provide facilities for lifelong education for all citizens, so that the individual becomes a self-learner and continues to extend his/her intellectual capacity; technical skills and ability to cope with new technologies and discoveries, and develops an appreciation and understanding of changes now occurring in the social and economic life of Maldives.

(g) to develop a sympathetic appreciation of the diversity and interdependence of peoples in the national and international communities.

2. The major objectives[2] of education are as follows:

(a) Expand and strengthen the provision of childhood care and education.

(b) Provide universal basic education (grades 1-7) by the year 2000.

(c) Increase the numbers of trained manpower.

(d) Contribute to the national effort to increase trained manpower.

(e) Improve educational efficiency through quality enhancement.

(f) Improve equity in access and quality of education by gender and location.

(g) Improve curricular relevance to prepare students both for further education and for emerging educational opportunities and to develop appropriate values and attitudes.

(h) Improve and strengthen the management of the education system.

3. The national philosophy[3] of education includes four main aspects dealing with students' physical and emotional development, cognitive development, social and moral development and skills development. The subjects are developed so as to enhance these various aspects appropriately. Syllabuses are designed by incorporating these elements in an integrated, cohesive and well-defined manner. The teaching material or textbooks are then prepared with the aim of achieving the objectives of the syllabuses.

4. The National Curriculum[4] offers seven subjects namely: mathematics, English, Dhivehi, Islam, environmental studies, practical arts and physical education at the primary level. At middle-school level, environmental studies is replaced by social studies and general science. There are two levels of secondary education comprising a three-year programme of lower secondary education where students are prepared to take the GCE 'O'-Level examinations, and two years of upper secondary, grades 11 and 12, after which students take the GCE 'A'-Level examinations offered by EDEXCEL.

MECHANISMS OF CURRICULUM DEVELOPMENT

The National Curriculum is based on fundamental principles within an Islamic framework. These principles, derived after several stages of consultations, encompass democracy, equity, nationalism, independence, innovation for development and strengthening of the Maldivian society. Based on these fundamental principles, the MOE, in consultation with the National Education Council (NEC), produces national objectives for the education sector (see above). The Educational Development Centre

[1] Unpublished document of the Ministry of Education, 1997, *Education Sector Master Plan 1997–1998*, p. 6.

[2] Ministry of Education, 1986, *Educational and Human Resource Development Plan 1985–1995*, p. 7.

[3] Educational Development Centre, Ministry of Education, 1984, *Introduction and guidance for teachers on the National Curriculum for Primary and Middle Schools*.

[4] Ibid.

(EDC) is responsible for translating these national objectives into curriculum statements after appropriate consultations. Once the Minister of Education adopts the curriculum statements as policy, EDC draws up the national frameworks for individual subject areas, the syllabi, textbooks, teacher's guides and other relevant resources. Subject panels, consisting of practising teachers and subject specialists from various sectors, including the Department of Public Examinations and the Institute of Teacher Education, help the EDC in the process.

As of 1999, EDC is also responsible for specifying the curriculum materials for the secondary levels. The centre develops teaching materials and resources for Islamic Studies, Dhivehi and Fisheries Science. For the other subjects EDC specifies the materials and resources to be used. Even at the secondary level, subject panels assist EDC.

Table 1 shows in detail the interrelationships between the various bodies involved in the adaptation of curricula in the Maldives.

TABLE 1. The curriculum: who makes which choices?

	CENTRAL LEVEL	REGIONAL/PROVINCIAL	SCHOOL LEVEL
	MINISTRY OF EDUCATION (MOE) EDUCATIONAL DEVELOPMENT CENTRE (EDC) DEPARTMENT OF PUBLIC EXAMINATIONS (DPE) INSTITUTE FOR TEACHER EDUCATION (ITE) SUBJECT PANELS (P)	ISLAND OFFICES (10) ATOLL EDUCATION CENTRES (AEC) ATOLL PRIMARY SCHOOLS (APS)	HEADS SUPERVISORS (SP) TEACHERS COMMUNITY PARENT/TEACHER ASSOCIATIONS (PTA)
AIMS & OBJECTIVES	Sets national aims (EDC MOE). Sets national codes of behaviour (MOE). Trains teachers according to national goals (ITE). Ensures school-based supervision and support (MOE).	Interprets aims to teachers (IO/AEC/APS). Interprets national codes of behaviour for pupils and teachers. Sets local codes of behaviour for pupils (AEC/APS).	Interprets aims and objectives to pupils (heads/teachers). Interprets local and national codes of behaviour for teachers and pupils (heads).
CURRICULUM PLAN	Writes national syllabus and allocates appropriate syllabus for secondary level (EDC, P). Decides time allocations (EDC/MOE). Trains teachers for the implementation of the national curriculum (ITE). Ensures achievement of curriculum objectives (MOE).	Teaches according to national syllabus (AEC, APS). Timetable as recommended (AEC, APS). Recommends community participation (IO, AEC, APS).	Makes schemes of work (teachers, SP, heads). Timetable according to recommended time allocations (heads, SP and teachers). Teach according to national syllabus (teachers). Controls co-curricular activities (heads, SP, PTA). Provides assistance to schools (PTA).
METHODS & APPROACHES TO TEACHING	Prepare teachers' guides which recommend teaching methodology (EDC, P). Moderate teaching methodology through supervision (MOE). Train teachers in the use of certain methodology (ITE).	Conduct workshops for teachers on teaching methodology (AEC, APS). Facilitate in conducting field trips and other field work (AO, IO).	Practices recommended methodologies (teachers). Relate methods according to student needs (teachers). Relate teaching to local community (teachers).
MATERIALS	Commissions to write textbooks for the national syllabus (EDC, P) Choose textbooks for secondary schools. Produces or commissions to produce audio-visual materials for the national syllabus (EDC).	Choose educational resources for school use (AEC, APS). Initiate locally relevant resource materials (AEC, APS).	Gives importance to the use of recommended textbooks (heads, SP, teachers). Procure resource and supplementary materials (heads, PTA, community/parents)
EVALUATION & EXAMINATION	Set central examinations and expected standards (DPE). Train teachers in assessment and evaluation (ITE).	Conduct regional workshops for teachers on assessment and evaluation (AEC, APS).	Evaluate and assess all aspects of student achievement (teachers, SP, heads). Sets all internal tests and examinations (teachers, SP, heads). Marks work and keeps records (teachers, SP, heads).

PROBLEMS FACED BY CURRICULUM DEVELOPERS

Curriculum developers at EDC are responsible for the formulation and development of curriculum materials. Each curriculum developer is responsible for a subject area. The curriculum developer has to design the syllabus, decide on the content and prepare textbooks and teacher's guides. In conducting these activities, curriculum developers have to overcome a number of difficulties, such as the following:

At the curriculum design level

- Some curriculum developers need further training, particularly in modern curriculum design techniques.
- There is a particular lack in the region of adequate reference materials, journals and curriculum materials used in other countries.
- There is limited access to the Internet.

At the implementation level

- There is a need for strengthening a process of regular feedback from teachers on implementation.
- There are limited opportunities for curriculum developers to observe classroom teaching.

At the evaluation level

- There is a lack of regular interaction with teachers.
- There is a lack of regular feedback from teachers.
- In some instances, teaching is not geared to achieve curriculum objectives.
- In some instances, testing and examinations are not aligned with curriculum objectives.

A RECENT CURRICULUM REFORM: REVISING THE SOCIAL STUDIES SYLLABI AND TEXTBOOKS

Rationale for change

As local and global developments influence Maldivian society, there is recognition of the need for the syllabi and teaching materials to reflect these changes. In this respect, many emerging issues need to be incorporated into the social studies syllabus. These include environmental issues (with special focus on the effect of greenhouse gases and the rise in sea-level), overpopulation, the challenges of living in a rapidly developing world, international understanding, tolerance, health and population education, gender prejudice and other social, economic and political issues.

Process of reform

In 1990, social studies subject panel meetings were held to discuss the relevance, appropriateness and accuracy of the existing syllabi. Discussions generated the view that most of the topics in social studies needed to be presented in a new perspective since some of the information was outdated. Thus, the textbooks also needed to be changed. Questionnaires were sent out to all schools that taught this subject. These questionnaires were directed at obtaining a wide range of information on the current materials. Feedback from these schools supported the view of the panel members.

Draft syllabi for social studies were prepared under the guidance of subject experts and the subject panel. After discussions with teachers and the panel, the Ministry of Education approved the final syllabi (see Figure 1) in 1991.

The syllabi were designed to encourage changes in teaching style in order to accomplish the objectives of the National Curriculum. They encourage teachers:

- to develop metacognitive skills and understanding;
- to be problem posers and guides rather than problem solvers;
- to present the material in everyday contexts;
- to encourage wider involvement of community, parents, etc. in the learning process;
- to enhance group work; and
- to encourage process-oriented teaching.

Textbooks and teacher's guides were prepared and pretested with the help of practising teachers according to the requirements of the new syllabi. After the trials, the textbooks and teacher's guides were published.

The new syllabi and the accompanying textbooks for social studies brought very positive feedback from schools. It was claimed that students' interest in the subject had increased and that the presentation and layout of the new textbooks stimulated interest, generating lively classroom discussions. Teachers also indicated that the curriculum introduced and enhanced research skills in students, fostering their motivation to learn. It also introduced critical thinking skills, making students more active participants in class. However, some schools noted that the level of English used in the texts was higher than in other subjects, which posed some problems for students.

CONCLUSION

The Maldives islands are widely dispersed and, as access to some of them is not very frequent, curriculum developers do not receive regular feedback from schools. At the implementation stage, curriculum developers need contact with teachers to get first-hand information about the syllabuses or teaching material. To gauge the effectiveness of these materials, systematic evaluation is also of utmost importance. Measures need to be taken to ensure that teachers are informed of the evaluation results so that steps can be taken to remedy the situation.

One of the major constraints in curriculum development is the need for further streamlining of the curriculum development process. In the new framework, EDC's role will shift more towards the management of curriculum development, while increasing the involvement of experienced teachers in the process. As teachers are the deliverers of the curriculum at classroom level, effective implementation largely depends on them.

Several reforms have already been introduced into the content and teaching methodologies of the national curriculum that came into effect in 1984. However, this curriculum now needs a major revision to adjust and strengthen it to enable our citizens to face the challenges of the twenty-first century. A major nationwide curriculum review activity is planned for April 1999.

FIGURE 1. Revision of social studies textbooks

One of the reforms recently undertaken in the area of social studies can be illustrated the new syllabus designed for use at middle-school level. The new social studies syllabus is designed to try to cope with the rising challenges arising from globalization.
The textbooks based on the previous syllabuses for Grade 6 and 7 social studies were structured as follows:

Grade 6—Social studies (published in 1986)
Unit 1: The family.
Unit 2: Comparative study.
Unit 3: The community.
Unit 4: Internationalism.
Unit 5: Climatic regions.
Unit 6: International links.
Unit 7: Links by commerce to the international world.

Grade 7—Social studies (published in 1986)
Unit 1: First Maldivians.
Unit 2: Post-conversion.
Unit 3: Independence of Maldives and our neighbours.
Unit 4: The Republic.
Unit 5: Resource development.
Unit 6: Law and order.
Unit 7: International relations.

Component 2: Economic activities and settlement patterns with special reference to Maldives.
Aim of the component: Introducing students to economic geography, human geography and commerce. In introducing these disciplines, students are first required to view the global background and then the Maldivian scene. This component deals with Main Objective no. 5 in the Social Studies Syllabus.
Unit 5: Some major economic activities in Maldives.
Unit 6: Economic activities in Maldives.
Unit 7: Population, environment and migration in Maldives.
Unit 8: Introduction to commercial activities.

Component 3: Governments at home and abroad
Aim of the component: Understanding modern governments in the global context and viewing the structure and development of government in Maldives.
Unit 9: Modern statecraft.
Unit 10: The structure of Maldivian government.

Component 4: Towards a global outlook
Aim of the component: Understanding the forces that have shaped and are continuing to shape the global outlook of the contemporary world. Global outlook is a major theme for the whole syllabus and is an important feature in the history of humanity.
Unit 11: 1. War and Peace in the twentieth century.
Unit 11: 2. Interaction and regional organizations.

The textbooks based on the new syllabuses for Grade 6 and 7 social studies are structured as follows:

Grade 6—Social studies (published in 1993)

Component 1—Earth the living planet.
Unit 1: The universe, the solar system and planet earth.
Unit 2: The atmosphere, lithosphere and hydrosphere.
Unit 3: Weather and climate.
Unit 4: Physical and political geography of the world.

Component 2—Humanity
Unit 5: Astronomy, geography and navigation in the Maldives.
Unit 6: Origins and development of human cultures.
Unit 7: The world civilizations.
Unit 8: Western civilization and the industrial revolution.
Unit 9: The space age.

Component 3— Human institutions
Unit 10: Society and culture.
Unit 11: Languages and scripts.
Unit 12: The religions of humanity.

Grade 7—Social studies (published in 1994)

Component 1: History of Maldives in the perspectives of global development
Aim of the component: Viewing the history of Maldives against the background of global developments. Teachers should encourage students to always view the history of Maldives against the global background and not as an isolated entity.
Unit 1: The South-Asian heritage of early Maldives.
Unit 2: Islam and the history of Maldives.
Unit 3: Maldives and the advent of colonialism in South Asia.
Unit 4: Nationalism in Asia and the Maldives in the Twentieth Century.

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Myanmar

National aspects of curriculum decision-making

U Myint Aye and Daw Tin Kyi

Estimated population (1995)	45,100,000
Public expenditure on education as percentage of Gross National Product (1995)	1.3
Duration of compulsory education (years)	5
Primary or basic education	
Pupils enrolled (1995)	5,530,502
Teachers (1995)	119,942
Pupil/teacher ratio	46:1
Gross enrolment ratio (1995)	
—Total	100
—Male	102
—Female	99
Net enrolment ratio (1995)	
—Total	85
—Male	85
—Female	85
Estimated percentage of repeaters (1995)	–
Estimated percentage of drop-outs (1995)	–
School-age population out of school (1995)	80,000
Secondary education	
Students enrolled (1995)	1,800,000
Gross enrolment ratio (1995)	
—Total	30
—Male	30
—Female	29
Third-level enrolment ratio (1995)	5.2
Estimated adult literacy rate (1995)	
—Total	83
—Male	89
—Female	78

Source: UNESCO statistical yearbook, 1998, Paris

The Union of Myanmar is currently in the process of transforming its political, social, economic and administrative systems. In this context, the education system is being transformed in order to meet changing societal needs.

EDUCATIONAL OBJECTIVES

In order to implement an education system that is compatible with the cultural, traditional, and social values of the country, and in keeping with an economic system that will facilitate national development and nation-building, the Government of Myanmar has identified the following main objectives:

- To enable every individual to acquire basic education;
- To base education on raising moral standards;
- To develop knowledge, including the scientific and technical know-how needed for nation-building;
- To produce technicians, skilled workers and proficient intellectuals with practical knowledge, who are loyal to the State and will contribute to nation-building endeavours;
- To train citizens so that they will achieve all-around development;
- To allow those with the requisite intellectual ability, calibre and industriousness to acquire a university education;
- To offer undergraduate and post-graduate courses for those who are working and thereby enable them to study during employment.

THE MYANMAR SCHOOL SYSTEM

The structure of the country's formal school system is 5+4+2, comprising a total of eleven years: five years at the primary level; four at the secondary (middle) level; and two years at the upper secondary (high) level. All schools in Myanmar are State schools and follow the same centrally prescribed curriculum. The admission age is 5 years. Tables 1 to 3 provide a current statistical overview of the education system.

ORGANIZATIONAL STRUCTURE OF CURRICULUM DEVELOPMENT

Currently, there are nine departments under the Ministry of Education (MOE). In 1998, in order to manage the education system more effectively, the Department of Basic Education (DBE) was expanded into three departments.

TABLE 1. Department of Basic Education, number of schools by type (1998/99)

Department	High	Middle	Primary
DBE (1)	350	853	15,408
DBE (2)	429	1,017	18,207
DBE (3)	157	237	2,214
Total	936	2,107	35,829

TABLE 2. Department of Basic Education, number of teachers by level (1998/99)

Department	High	Middle	Primary
DBE (1)	5,518	31,911	54,013
DBE (2)	6,722	42,915	55,595
DBE (3)	3,368	14,955	11,944
Total	15,608	89,781	121,552

TABLE 3. Department of Basic Education, number of students by level (1998/99)

Department	High	Middle	Primary
DBE (1)	161,375	528,098	1,836,056
DBE (2)	223,542	703,763	2,329,004
DBE (3)	120,348	287,629	521,954
Total	505,265	1,519,490	4,687,014

The Department of Educational Planning and Training (DEPT) has the main responsibility for the administration and management of curriculum and textbooks, teacher education and special projects. The curriculum section under the DEPT is responsible for the organization of curriculum development at the basic education level. A deputy director and assistant director head the curriculum section. The science and the arts curriculum sections each have one staff officer and one deputy staff officer. The curriculum section is also responsible for co-operating on and facilitating the task of printing,and distribution of textbooks and stationery for students of all levels.

With the enactment of the 1966 Union of Burma Basic Education Law, the Basic Education Council (BEC), chaired by the Minister of Education, came into existence. A basic education curriculum, syllabus and textbook committee has been established at the national level under the BEC. This committee is wholly responsible for curriculum development at all levels of basic education. The functions of this national-level curriculum committee include: drawing-up, scrutinizing and revising curricula and syllabi; compiling and writing textbooks; preparing teaching aids; recommending types of performance assessments.

Subject area curriculum committees, headed by appropriate specialist professors, work under the direction of the national curriculum committee. Members of the subject committees include representatives from the Myanmar Education Research Bureau, Institute of Education, teacher education colleges and schools, subject experts and selected teachers. The DEPT deputy staff officers serve as secretaries for these subject curriculum committees, which are involved in: writing and compiling textbooks; preparing prototype teaching aids and materials and teacher's manuals; designing test formats for performance assessment; and revising the curriculum content in conformity with policy changes. Other functions of these committees involve: conducting in-service training for all levels, whenever necessary; responding to inquiries about curriculum and textbook matters; script-writing for educational radio and television.

An overview of curriculum responsibilities—including those at the regional/provisional and school levels—is provided in the chart entitled *The curriculum: who makes which choices* (see Table 4).

PRIMARY CURRICULUM REFORM

The main reasons for primary curriculum reform are to develop and strengthen basic language skills and mathemat' al skills; foster good citizenship; promote social justice in all communities; and develop life skills for healthy-living. To this end, the primary level curriculum has been designed to assure coverage of three key domains: **cognitive, affective** and **psychomotor**. Subjects taught at this level include: the Myanmar and English languages, mathematics, basic science, general studies (which includes moral education and civics, life skills and nature study), and social studies (which includes geography, history, moral education, civics and life skills).

To date, new primary-level textbooks and teacher's manuals have been designed, with training workshops for the teachers to be conducted in May 1999. Schools in Yangon and Mandalay have been selected to field test the new teaching/learning processes developed for general studies, social studies and basic science, using multi-media classroom settings.

Problems facing curriculum reforms

To date, there have been no major problems in the adaptation of curricula (design, follow-up of the reforms) or in developing students' textbooks and teacher's manuals. However, some weaknesses have emerged in the utilization of teaching/learning materials in the classroom.

TABLE 4. The curriculum: who makes which choices?

CENTRAL LEVEL	REGIONAL/PROVISIONAL LEVEL	SCHOOL LEVEL
Ministry Basic Education Curriculum, Syllabus and Textbook Committee	State/Division Educational Officers Inspectors Education colleges	Heads Teachers Communities
AIMS AND OBJECTIVES	**AIMS AND OBJECTIVES**	**AIMS AND OBJECTIVES**
The Myanmar Government has set the following educational objectives: (a) to enable every individual to acquire basic education; (b) to base education on the raising of moral standards; (c) to develop knowledge, including the scientific and technical know-how needed for nation-building; (d) to produce technicians, skilled workers and proficient intellectuals with practical knowledge, loyal to the State and who will contribute to nation-building; (e) to train the citizens so that they will achieve all-around development; (f) to permit access to university education to those who possess the requisite intellectual ability, calibre and industriousness; (g) to offer undergraduate and post-graduate courses for those who are working, thereby enabling them to study during employment.	The main objectives of basic education in Myanmar are as follows: — to enable every citizen of the Union of Myanmar to become a well-equipped physical and intellectual worker; with basic education, good health and moral character; — to lay the foundations for vocational education for the benefit of the Union of Myanmar; — to give priority to the teaching of science that is capable of strengthening and developing productive forces; — to give priority to the teaching of arts that is capable of preserving and developing the culture, fine arts and literature of the State; — to lay a firm and sound educational foundation for the further pursuance of university education.	Heads, teachers and pupils will join hand-in-hand to bring about a change of behaviour in schools relating to life skills, morals and civics.

TABLE 5. The curriculum plan for primary and secondary education

CURRICULUM PLAN	CURRICULUM PLAN	CURRICULUM PLAN
Lower Primary-Level Course of Studies **Subjects** — **Periods per week** Myanmar language — 11 English — 4 Mathematics — 7 General studies — 9 Aesthetic education — 3 Physical education — 4 School activities — 2 **Total** — 40 Note: each period lasts thirty minutes **Upper Primary-Level Course of Studies** **Subjects** — **Periods per week** Myanmar language — 8 English — 5 Mathematics — 7 Basic science — 4 Social studies — 8 Aesthetic education — 3 Physical education — 4 School activities — 1 **Total** — 40 Note: each period lasts thirty-five minutes.	Course contents and syllabi will vary according to the needs of society. Local timetables will be adapted to environmental studies. Teachers, community participants and members of the board of trustees will be involved in the curriculum plan.	The scheme of work will be drawn up by using the bar graph of quarterly course contents. The syllabus at the school level will be emphasized so that the changes in pupil behaviour can be optimized. Aesthetic and physical education will form a regular part of the timetable.

Lower Secondary-Level Course of Studies

Subjects	Periods per week
Myanmar language	5
English	6
Mathematics	8
General science	4
History	4
Geography	4
Moral education	1
Physical education	1
Arts education and co-curricular activities	2
Total	**35**

Note: each period lasts forty-five minutes.

Upper Secondary-Level Course of Studies

Subjects	Periods per week
Myanmar language	5
English	5
Mathematics	5
Co-ordinated science	9
Social studies	6
Moral education	1
Physical education	2
Arts education and co-curricular activities	2
Total	**35**

Note: each period lasts forty-five minutes.

TABLE 6. Guiding principles

METHODS AND APPROACHES TO LEARNING Learning activities will be focused on concepts and facts rather than on memorization. By using the activity-based learning materials, *learning to learn* will be emphasized in the teaching-learning process. **MATERIALS** The new textbooks (students' texts and teacher's manuals) will be printed continuously. **EVALUATION AND EXAMINATION** Regular assessment takes place at Kindergarten and Standard One. From Standard Two to Standard Six, there is an end-of-chapter test. From Standards Seven to Nine, for the first semester, there is only an end-of-chapter test; the year-end examination will be held during the second semester. There is also an end-of-chapter test in Standard Ten. After finishing the upper secondary-level course, the students need to sit for the matriculation examination. The students who obtain high marks in the matriculation examination can sit the entrance examination to join the professional institutes. In order to enter the professional institutes, marks obtained from the entrance examination, including marks of their school activities, will be considered.	**METHODS AND APPROACHES TO LEARNING** Teachers will be trained to facilitate pupil learning of concepts by using the learning materials. Supervisory Committee will be organized for monitoring the effectiveness of the teaching-learning process. **MATERIALS** Students will be motivated to collect learning materials and also to make them. The new subject-relevant materials will be programmed by subject. Reference books will be provided for local schools. **EVALUATION AND EXAMINATION** The testing techniques will be distributed in state and division levels. Teacher training will be conducted in testing techniques—especially for end of chapter tests. There are no local examination.	**METHODS AND APPROACHES TO LEARNING** Different methods—namely role playing, field trips, demonstration and discovery methods—will be used according to the nature of the subjects. The teaching of the course content in environmental or nature study, morals, civics and life skills will be related to local community life. **MATERIALS** Some pupils buy and use the prescribed textbooks. Teachers *only* use the teachers' manuals. Parents are not urged to buy the textbooks. Learning materials from the environment will be used in the classrooms. **EVALUATION AND EXAMINATION** The affective growth of students will be planned so as to determine whether behaviour changes have occurred. The end-of-chapter test will be focused on the primary and general secondary level. The year-end examination will be held for Standards Seven, Eight and Nine. The marks obtained by students in academic subjects and in school activities are recorded in a Comprehensive Personal Record.

Nepal

Education policies, curriculum design and implementation at the general secondary level

Estimated population (1995)	21,500,000
Public expenditure on education as a percentage of Gross National Product (1995)	2.9
Duration of compulsory education (years)	5
Primary or basic education	
Pupils enrolled (1995)	2,800,000
Teachers (1994)[1]	81,544
Pupil/teacher ratio	39 :1
Gross enrolment ratio (1995)	
—Total	110
—Male	129
—Female	89
Net enrolment ratio (1995)	
—Total	63
—Male	80
—Female	46
Estimated percentage of repeaters (1992)[1]	27
Estimated percentage of drop-outs (1995)	48
School-age population out of school (1995)	1,000,000
Secondary education	
Students enrolled (1995)	91,000
Gross enrolment ratio (1995)	
—Total	37
—Male	49
—Female	25
Third-level enrolment ratio (1995)	5.2
Estimated adult literacy rate (1995)	
—Total	28
—Male	41
—Female	14

Notes:
1. Last year available.

Source: UNESCO statistical yearbook, 1998, Paris.

A number of high-level government documents guide the development of curricula. They include the Secondary Education Perspective Plan (1996–2011), the Secondary Education Action Plan (1997–2002) and a recent High-Level Education Commission Report (1998).

ORGANIZATIONAL STRUCTURE AND MECHANISMS IN CURRICULUM REFORM

The curriculum planned at the central level is modified by all the processes leading to its adoption. In the classroom at the secondary level most institutionalized activity is centrally controlled.

Ministry of education

The task of initiating educational activities throughout Nepal lies with the Ministry of Education (MOE). The Ministry is responsible for educational planning and management, as well as in improving service delivery systems across the country. MOE is composed of three divisions: Planning; General Administration; and Educational Administration. Educational programmes and services are prepared by: the Curriculum Development Centre; the Secondary Education Development Centre; the Distance Education Centre; the Office of the Controller of Examinations; the National Centre for Educational Development; the regional education directorates and district education offices. From July 1999 a new structure will be implemented with the formation of a Department of Secondary Education, containing a Primary and Basic Education Division and a Secondary and Higher Secondary Division. This will separate policy making from executive actions.

The National Curriculum Council

A high-level National Curriculum Council (NCC), chaired by the Minister of Education, approves all curricula and guides the detailed developmental work of the Curriculum Development Centre (CDC) by setting operational and administrative policy.

Technical Committees

The NCC forms ad-hoc technical committees when additional advice is required. Matters concerning the relevance of curricula drafted by CDC may be referred to such

a technical committee if the NCC feels additional advice is necessary.

Curriculum Development Centre

The CDC is responsible for the maintenance, transmission and renewal of the school-level curriculum and is also concerned with pre-primary education. (See below for further discussion of CDC).

The Secondary Leaving Certificate Board

The Secondary Leaving Certificate Board sets policies and makes decisions relating to the School-Leaving Certificate (SLC), which are then implemented by the Office of the Controller of Examinations (OCE). A reformed SLC, with single subject certification is planned for July 2001. The courses leading to this examination are to be implemented from grade 9, beginning in July 1999.

The Secondary Education Development Centre

The Secondary Education Development Centre (SEDEC) is responsible for a range of in-service training activities at the secondary level. SEDEC operates through twenty-five secondary education development units at locations, which allow for national coverage. The training activities also support the work of the Curriculum Development Centre and the OCE.

Janak Educational Materials Centre

The Janak Educational Materials Centre (JEMC), operating as a public limited company, produces and distributes school textbooks throughout Nepal. JEMC's Board of Directors is comprised of representatives from concerned ministries and organizations.

THE CURRICULUM DEVELOPMENT CENTRE

Responsibilities and activities

The CDC (see Figure 1) is responsible for the maintenance, transmission and renewal of the school education curriculum. The wide-ranging activities of the centre include developing, revising and disseminating textbooks and teacher's support materials. A programme of seminars and workshops supports these activities. CDC's development and monitoring work is carried out by specialized curriculum subject units, advised by curriculum subject specialist committees. Subject units cover languages, science and maths, social studies, health and physical education. To support CDC's activities, various studies and surveys are conducted on curriculum-related issues and problems. The activities of CDC give rise to a wide range of relationships with other institutions. The most important of these is with the teachers and student in schools, who are the immediate end-users of the centre's products. CDC also incorporates a publishing unit.

The Publishing Unit (PU)

The PU (in collaboration with subject specialist units, their advisory subject specialist committees, subject advisers and consultants) sets textbook specifications. According to prescribed procedures, the PU also selects textbook writers on the basis of: subject knowledge, classroom experience and sample materials reviewed by teachers/subject experts. A PU staff member serves as the managing editor, and is responsible for briefing contracted writers and liaising closely with them to ensure quality and schedule controls, until the camera-ready copy goes to the printers. The PU manager also arranges distribution of the draft materials to be tested in schools and validated by teacher groups. The managing editor, unit specialist, subject committee members, advisers and specialists all visit schools to collect comments which are subsequently relayed to the writers.

Subject Advisory Committees

The role of these committees is to advise on the preparation and revision of the curriculum, and the preparation, revision and evaluation of textbooks and teachers guides. The Curriculum Officers, as members of the committees, also participate in these activities and provide the secretariat that promotes the committee's work. Sub-committees are established to carry out specialist developmental inputs. The subject committees cover Nepali, English, science, mathematics, social studies, and health, population and environment (HPE).

Task Committees

Like the publishing unit, the task committees cut across the boundaries of the various specialist units. Examples are the formative assessment committee and the dissemination committee. Task committees are formed to advise the cross-boundary projects managing officer on policy and operational matters.

DEVELOPMENTS IN THE DESIGN, IMPLEMENTATION AND FOLLOW-UP OF CURRICULUM REFORM

Aims of secondary education

The general aims of secondary education (framed within the national goals of education, see Figure 2) are to: produce healthy citizens who are: familiar with the national tradition, culture, social environment, democratic values; able to use language effectively in daily life; aware of scientific issues; creative, co-operative, industrious; able to contribute to economic development.

The secondary curriculum

The lower secondary curriculum (grades 6, 7 and 8) and the secondary curriculum (grades 9 and 10) are constructed with *core* subjects and *optional* subjects. The five lower secondary core subjects are Nepali, English, math, science and social studies. The six secondary core subjects are Nepali, English, math, science, social studies, health, population and environment (HPE).

FIGURE 2. Curriculum Development Centre

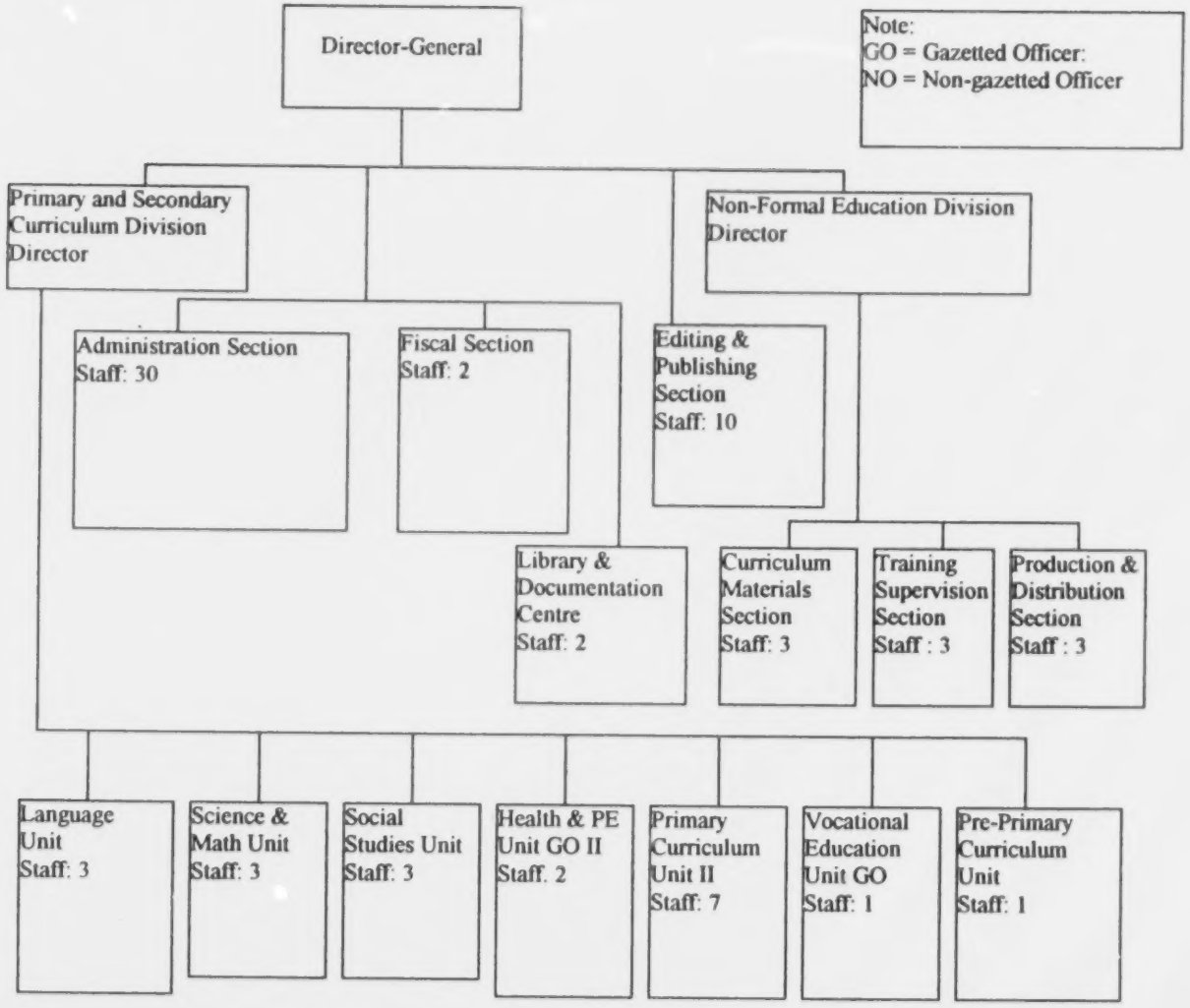

FIGURE 2. National goals of education

The National Goals of Education frame all the detailed technical work of curriculum development and should be reflected in all documents and materials developed by the Curriculum Development Centre. The national education goals are to:

- nurture and develop the personalities and inherent talents in each person;
- instill respect for human values and the will to safeguard national and social beliefs so as to help develop a healthy social unity;
- help the individual to socialize, enhancing social unity;
- help the individual keep his or her identity in the national and international context and to help him/her lead a socially harmonious life in the modern world;
- assist the modernization of the country by creating able manpower for its development;
- teach the thoughtful protection and wise use of Nepal's natural resources;
- bring those who are underprivileged into the mainstream of the nation.

TABLE 1. Secondary school curriculum structure—general secondary school level

	Subjects	Classes 9 and 10	
		Weightage	Full Mark
1	Nepali	5	100
2	Mathematics	5	100
3	English	5	100
4	Science	5	100
5	Social studies	5	100
6	Health, Population and Environment Education	4	100
7	Optional Paper I	5	100
8	Optional Paper II	5	100
	Total	39	800

A. Option 1 paper subjects (any one)

Languages: Nepali, Arabic, Avadhi, Bhojpuri, Bengalit, Chinese, Hindi, Japanese, Maithili, Sanskrit, Tibetan, Persian, Hebrew, Urdit, English, French, German, Greek, Latin, Russian, Spanish. (Other national languages of Nepal will be included in the curriculum, provided that grammar books, teaching materials, etc., are available.)

Humanities, Social Science: history, geography, civics, economics, sociology.

Optional mathematics

B. Option 2 paper subjects (any one)

Interdisciplinary: agricultural education, food science, architectural education, industrial education, office management and accounting, auditing, typing and shorthand, computer science, home science, handicrafts painting, sewing and knitting, bamboo-work, dance, music, Ayurveda naturopathy, health and physical education, Yoga education, photography, journalism, instrumentation.

Secondary Education Development Project

The Secondary Education Development Project (SEDP) began in 1993. SEDP originally aimed at improving and reinforcing three subjects (English, science, mathematics). In 1997, support to Nepali and social studies was added. SEDP also has the goal of reforming the examination system and providing materials and equipment to selected secondary schools. The project has been providing support services through the Secondary Education Development Centre and the twenty-five training centres.

Accomplishments

As of July 1998, CDC had produced ten curriculum booklets outlining the lower secondary curriculum (grades 6–8) and the secondary curriculum (grades 9 and 10) and covering all core subjects therein. The curriculum and textbooks for grades 6 (1996), 7 (1997) and 8 have been printed and distributed (1998). The lower secondary curriculum is being prepared for publication. However, English is the only subject in which teacher's guides have so far been produced.

In July 1998, the National Curriculum Council (NCC) decided to restructure the curriculum of grades 9 and 10, to allow for the inclusion of a new sixth core subject, health, population and environment (HPE). This reduced English, Nepali, mathematics and science from six to five periods each week. The curriculum was adjusted in line with the reduction of periods. The grade 9 production schedule for textbooks and teacher's guides has now been separated from that of grade 10. The grade 9 textbooks for the six core subjects were scheduled for printing by the end of March 1999, while completion of grade 9 teacher's guides was foreseen for the end of April 1999.

CDC has formulated a seven-stage dissemination strategy for the grades 9 and 10 curriculum. The first stage (*approval*) was completed in November 1998. Included in the strategy are: detailed planning, package development, training of master facilitators and facilitators, training of head-teachers, cluster-based and school-based workshops. The full programme will be completed by the end of July 1999.

The Publishing Unit's first textbooks are clearly of a better quality than previous CDC/SEDP outputs. The unit has also produced a four-page CDC bulletin of a high standard (February 1998) to publicize its activities, as well as a leaflet in English and Nepali. Textbooks have been monitored for gender, socio-economic and regional equity.

DEVELOPMENTS AND CHALLENGES IN THE DESIGN, IMPLEMENTATION AND FOLLOW-UP OF CURRICULUM REFORM

While the capacity of CDC to handle complex tasks is clearly improving, the capacity to plan and to develop human resources has certain constraints due to the rate of staff changeovers. This makes the institutionalization of curriculum development design processes very difficult. These staff changes are at all professional and administrative levels of the organization.

The same changes create problems of continuity and liaison with other organizations connected with the implementation process. These institutions—District Education Offices, Regional Education Offices, OCE and SEDEC—also have high staff instability.

There are very few formalized follow-up activities, except by the SEDP BME Unit. These are mainly concerned with project evaluation.

REFORMING THE CURRICULUM WITH SPECIAL EMPHASIS ON SOCIAL STUDIES

As described earlier all core curricula and many optional subjects have been changed in recent years. In the development of all core curricula there has been tension between traditionalists and modernists, as well as between nationalists and those in favour of globalization or wider horizons—those who speak for 'our values' and those who speak of 'global values'. Balancing these diverse views is a problem for all curriculum developers. No curriculum subject can avoid these controversies. While in science and mathematics the debate is narrower, in English and Nepali there are different dimensions due to the source of each individual language. Both of the two newer subjects—social studies and HPE—have proved to be controversial in different ways (see Figure 2).

Translating the goals, general objectives and specific objectives of the social studies curriculum into a useful textbook proved difficult. Although there are many dimensions to the discussion, the fundamental debate concerns whether education is about passing knowledge or learning skills—or what is the balance between the two. Members of the subject committee did not always agree with those who set the framework for developing the new textbook, creating what is hopefully a creative tension.

Those setting the framework for developing the new textbook felt that the following factors are all important in the writing of a new style textbook:

- Each chapter should have clearlythought-out learning outcomes. These will include not only factual information for knowledge and understanding, but specific skills such as interpreting a bar chart, locating places of historical importance, presenting an argument in favour of a certain course of action and collecting local data.
- The earlier textbooks mostly contained only factual information, followed by recall questions. The new textbook must present information in different forms (text, statistics, pictures, photographs, diagrams, graphs and charts, maps, newspaper items, source documents) and provide challenging questions to help students understand, interpret, analyze and evaluate the information.
- The textbook must include many project-related activities, starting with simple tasks, and moving towards longer projects. This will mean that most of the work studied has a local component and thus is of genuine relevance to the students. It will also mean that students can experience research activities, gaining practical investigation and analytical skills, and learning to present their findings. It will also help them to work together co-operatively.
- The students should be able to see what skills they are learning in each chapter and gain a sense of achievement and progress towards the school-leaving certificate (SLC). This may be done with a summary of chapters or topics. The exercises given in the textbook will not only test knowledge and understanding, but will expect analysis and evaluation of the information, and well-thought-out answers. They will also need to encourage the practice of practical skills and abilities. This will provide practice for new SLC-type questions.

FIGURE 2. Social studies curriculum

Objectives. There are twenty-eight general objectives listed in the grades 9 and 10 social studies curricula. Highly specific objectives are listed for grade 9 (twenty-seven objectives) and grade 10 (twenty-nine objectives).

Abilities. On achieving the course objectives, students will be able to demonstrate a wide range of abilities. Some examples of the abilities associated with knowledge and understanding and practical abilities are as follows:

Ability 1: Knowledge and understanding.

1. Describing projects in different zones and development regions;
2. Describing the achievements of Nepal in the fields of education, health, transportation, telecommunications, electricity and water supply;
3. Discussing the role of skilled manpower in the development of the infrastructure of Nepal;
4. Stating the role of international organizations in solving social problems;
5. Explaining different climates and the elements that affect them;
6. Giving a short introduction to the geo-economic activities of continents;
7. Identifying the problems created by population growth and migration and finding out ways to participate in solving them;
8. Describing the physical features of the Earth;
9. Examining the impact of landslides on the physical features of Nepal and participating in the task of avoiding them;
10. Listing the agricultural products grown in the various geographical areas.

Ability 2: Practical abilities.

1. Maintaining national dignity;
2. Drawing a map of Nepal and filling in the main industrial centres and roads;
3. Demonstrating models in class;
4. Analyzing the data presented in charts;
5. Locating historical sites on a map;
6. Investigating the problems of population growth;
7. Appreciating the contributions of our national heroes;
8. Applying the knowledge of social studies for the good of society;
9. Drawing a picture of the Himalayan region;
10. Recording the maximum rainfall of the month;
11. Designing a research proposal to find out about social evils.

Criteria. The new-style social studies textbook must be developed so that students can be thoroughly prepared to take the new SLC examination. The textbook must help them not only to understand the content of the course, but also to develop the necessary skills and ability to think critically about the different topics. Thus, each chapter should have clearly thought-out learning outcomes. These will include not only factual information for knowledge and understanding, but will also include specific skills such as those outlined in the previous section. After studying this lesson the student will be able to:

- interpret a bar chart;
- locate places of historical importance;
- present an argument in favour of a certain course of action;
- collect local data.

The earlier textbooks contained only factual information, followed by recall questions. To prepare for the new SLC examination, the new textbooks must present information in different forms (text, statistics, pictures, photographs, diagrams, graphs and charts, maps, newspaper items, source documents) and provide challenging questions to help students understand, interpret, analyze and evaluate the information.

As 30% of the new SLC marks will be given for project-style work to be carried out during the year, the textbook must include many such activities; starting with simple tasks, and evolving to longer projects. This will mean that most of the material studied has a local component and thus is of relevance to the students. It will also mean that students can undertake genuine research, and gain practical skills in investigating, analyzing and presentating their findings. It will also help them to work together co-operatively in groups. Such tasks are illustrated below.

EXAMPLES

- draw up a plan of your VDC, mark the water;
- prepare a poster or a talk to stop young people from experimenting with drugs;
- survey the type and number of animals kept in the local community;
- write and perform a short historical drama;
- keep a record of local weather over a long period and prepare a suitable display, such as a bar chart or graph.

The students should be able to see what skills they are learning in each chapter and gain a sense of achievement and progress towards the SLC. This may be done with a summary of chapters or topics. The exercises given in the textbook will not only test knowledge and understanding, but will require analysis and evaluation of the information and well thought-out answers. They will also need to encourage the practice of practical skills and abilities. This will provide practice for new-type questions on the SLC exam.

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Pakistan

Curriculum design and development

Estimated population (1995)	136,260,000
Public expenditure on education as percentage of Gross National Product (1995)	2.8
Duration of compulsory education (years)	5
Primary or basic education	
Pupils enrolled (1995)	18,400,000
Teachers (1995)	–
Pupil/teacher ratio	38 :1
Gross enrolment ratio (1995)	
—Total	74
—Male	101
—Female	45
Net enrolment ratio (1995)	
—Total	31
—Male	36
—Female	25
Estimated percentage of repeaters (1995)	—
Estimated percentage of drop-outs (1995)	52
School-age population out of school (thousands) 1995	12,700,000
Secondary education	
Students enrolled (1995)	5,300,000
Gross enrolment ratio (1995)	
—Total	21
—Male	28
—Female	13
Third-level enrolment ratio (1991)[1]	3.0
Estimated adult literacy rate (1995)	
—Total	38
—Male	50
—Female	24

Notes :
1. Last year available.

Source: UNESCO statistical yearbook, 1998, Paris

INTRODUCTION

Pakistan—governed under the Islamic, democratic, federal Constitution of 1973—is comprised of four autonomous provinces: Punjab, Sindh, North-West Frontier and Balochistan. Education in Pakistan is essentially a provincial affair. However, education is considered to be a vital source of nation-building. Therefore, in order to ensure national cohesion, integration and preservation of the ideological foundation of the State, certain educational functions are the responsibilities of the Federation—via the Federal Ministry of Education. These responsibilities include: curriculum, syllabus, planning, policy and educational standards. The 1976 Act of Parliament authorized the Ministry of Education (MOE) to appoint competent authorities to perform the following curriculum-related functions:

- In connection with the implementation of the education policy of the Federal Government of Pakistan (GOP), prepare or commission: schemes for studies; curricula, textbook manuscripts and strategic schedules for their introduction in various classes of educational institutions;
- Approve manuscripts of textbooks produced by other agencies, before they are prescribed in various classes of an educational institution;
- Direct any person or agency in writing (within a specified period) to delete, amend or withdraw any portion, or the whole, of a curriculum, textbook or reference material prescribed for any class of an educational institution.

Accordingly, a Central/National Bureau of Curriculum and Textbooks (NBCT, commonly known as the *Curriculum Wing*) was appointed to supervise curriculum and textbooks development/approval and to maintain curriculum standards from the primary through to the higher secondary levels. As a logical sequence to this action, four counterpart provincial curriculum centres (one in each province) were established to ensure provincial collaboration and evolve consensus in all activities falling within the purview of the Federation. This initiative was followed by the establishment of four Provincial Textbook Boards (PTTB)—one in each province. Within their respective jurisdictions, these PTTBs are responsible for preparing, publishing, stocking, distributing and marketing school textbooks

Boards of Intermediate and Secondary Education responsible for conduct of examinations at Secondary (IX-X) and Higher Secondary (XI-XII) levels were also

established at each of the divisional headquarters. Subsequently, another institution was established—the Inter-Board Committee of Chairmen (IBCC)—with the following objectives:

- To exchange information among the member boards on all aspects of secondary and higher secondary education;
- To achieve a fair measure of uniformity in academic evaluation standards;
- To promote inter-board curricular and extra-curricular activities;
- To serve as a board chief executives' discussion and consultation forum for all matters relating to secondary and higher secondary education development, and making suitable recommendations to the GOP;
- advise on and facilitate the exchange of teachers and students;
- perform such other functions as may be incidental or conducive to the attainment of the above objectives.

THE CURRICULUM DEVELOPMENT PROCESS

Reform

It may be noted that the process of curriculum reform in Pakistan has been introduced as part of the successive series of national education policies (Table 1).

TABLE 1. Education policy and curriculum reform cycle

National Education Policy	Curriculum reform cycle
1972	1st Cycle, 1973-76
1979	2nd Cycle, 1982-85
1992	3rd Cycle, 1992-95
1998	4th Cycle, 1998-01

The following six-phase strategy has been adopted for implementing curriculum change:

1. Evolution of curriculum objectives (by level);
2. Development of scheme of studies (by level);
3. Development of syllabus of each subjects;
4. Development of textbooks/instructional materials;
5. Review/approval of textual material;
6. Teacher training.

Developing objectives

Curriculum objectives are basically derived from the recommendations of National Education Policy, national level seminars and other forums (e.g. forums of the Inter-Board Committee of Chairmen (IBCC) and research studies conducted at provincial curriculum centres). The NBCT prepares the draft of objectives; which are widely circulated among the provincial institutions responsible for curriculum development, teacher training and examination. Based on their views/comments, these objectives are finalized. They are subsequently translated into the specific teaching objectives for various subjects. Several factors are considered in finalizing curriculum objectives; including the requirements that objectives should: (a) be precise; (b) assist in the selection of teaching strategy; (c) produce (or contribute to) a designated behaviour pattern; (d) enable the teachers to measure or evaluate the quality and effectiveness of learning.

The studies scheme

The scheme of studies is based on three key factors: (1) the national education policy; (2) market demand; (3) global issues that relate to new or contemporary education dimensions. Task work in this area is undertaken with active participation of the provincial government, research organizations and experts; as well as feedback from the IBCC.

Development of syllabi

Based on the objectives and scheme of studies, subject specific syllabi are prepared in consultation with: provincial curriculum centres; subject experts; and psychologists and serving teachers. Collectively, they ensure that the syllabi, in all respects, satisfy the following conditions:

1. They are based on the needs of the learner/child;
2. They take into account the existing knowledge and environmental experience of the learner;
3. The developmental level of the learner is considered in the cognitive, effectiveness and psycho-motor domains;
4. The contents should be focused on attaining the objective(s).

Textbook development

Provincial Textbook Boards (PTBB) are responsible for development of text-books according to the approved syllabi. Established lists of textbook writers in various subjects are kept. From these lists, invitations are issued to writers to submit draft materials within the prescribed syllabus parameters. Selections are made on the basis of the quality and relevance of materials submitted to local situations. Finally, the selected materials are transformed into textbooks; the final versions of which are sent to the NBCT for approval.

Review and approval

A National Review Committee, comprising five or six members includes: at least one expert from the Syllabus Formulation Committee; two subject experts; two school-teachers (one teaching the relevant material and one from a teacher-training institute). On receipt of textual materials from PTBB, this committee conducts textbook reviews based on the following parameters: (a) the book truly reflects the curriculum; (b) it meets the objectives stated in the curriculum; (c) the book does not contain any material repugnant to Islamic and Pakistani ideology.

In the case of approval, the textbook is sent back for publishing and distribution. In case of objection, the specific complaints are relayed along with revision recommendations.

Teacher training

Teacher training for curriculum implementation is the exclusive responsibility of the provincial government. However, it is now being stressed that each textbook must have a teacher's guide—also approved by the NBCT. In some cases, assistance in the training of master trainers is provided to provincial governments.

CURRICULUM DEVELOPMENT PITFALLS

Several major obstacles affecting the quality and effectiveness of the curriculum development process in Pakistan are summarized below.

Expertise

Some serving teachers are, of course, involved in curriculum development. But notwithstanding their outstanding subject area expertise, their contribution to the curriculum development is, for all practical purposes, *nominal*. The main reason for this is that they lack the requisite expertise. The existing training programmes provide little exposure in this area, and the teachers' academic qualifications do not necessarily contribute to curricular creativity.

Therefore, at best, the teachers are able to provide opinions about the compatibility between specific concepts or content and the intellectual development level of the children in a specific age group or grade. However, this guidance often reflects, in part, a *particular* situation with which the teachers have been dealing (e.g. children from a rural background) and, in part, their own capability to render a specific concept *comprehensible*.

Textbook quality

Textbooks often do not reflect the curriculum. Of course, it requires considerable experience and skill to: translate the curriculum in a style that covers the objectives; simultaneously take into consideration the children's language proficiency and background knowledge; and concurrently arrange the content in a logical sequence in a stimulating manner. But the all-important self-assessment questions or activities (especially questions focused on higher order skills) are invariably missing.

Implementation and follow-up

The third problem is that there is lack of follow-up of actual curriculum implementation in classroom practice. The curriculum actually implemented is generally *different* from the official curriculum document. The classroom teacher, who primarily focuses on the textbooks and assessment, does not take into account the educational objectives. No evaluation of the implemented curriculum is carried out; hence no feedback is received to revise the curriculum. In short, each of the steps in the curriculum development process, as outlined above, tends to occur in isolation from the others and there is no visible coherent curriculum development activity.

TABLE 2 The curriculum: who makes what choices?

	Curriculum Wing Ministry of Education	Regional/Provincial level • Local Authorities • Inspectors • Teacher's Choice	School level • Heads • Teachers • Communities
Aims and objectives	National aims, as reflected in the National Educational Policy	Evaluation/study reports of curriculum centres provide change direction	Some aims of effective domains are suggested by teachers
Curriculum plan	National framework: syllabus and weightage	Introduce unique cultural/regional aspects, including mother tongue	Scheme of work., adjustment of time-table, provision for co-curricular activities, exams
Methods and approaches to learning	Teacher-training courses are designed, also in-service teacher training	Teachers' colleges implement training programmes (pre-service)	Practice different methodology
Materials	Provincial textbooks are reviewed/approved by Federal Ministry through National Review Committee	Provincial Textbooks Boards commission writers and select material on merit basis	Representation of teachers. in the National Review Committee
Evaluation and examination	Inter-Board Committee of Chairmen, co-ordinate activities of the Exams Board	Board of Education holds exams	Trained teachers set the papers and evaluate the script

Philippines

Curriculum development

Bella O. Mariñas and Maria Pelagia Ditapat

Estimated population (1995)	67,800,000
Public expenditure on education as percentage of Gross National Product (1995)	2.2
Duration of compulsory education (years)	6
Primary or basic education	
Pupils enrolled (1995)	11,541,570
Teachers (1995)	–
Pupil/teacher ratio	35 :1
Gross enrolment ratio (1995)	
—Total	107
—Male	108
—Female	107
Net enrolment ratio (1995)	
—Total	90
—Male	89
—Female	91
Estimated percentage of repeaters (1992)[1]	2
Estimated percentage of drop-outs (1995)	30
School-age population out of school (1995)	1,000,000
Secondary education	
Students enrolled (1995)	4,809,863
Gross enrolment ratio (1995)	
—Total	79
—Male	–
—Female	–
Third-level enrolment ratio (1995)	29.7
Estimated adult literacy rate (1995)	
—Total	95
—Male	95
—Female	94

Notes:
1. Last year available.

Source: *UNESCO statistical yearbook, 1998*, Paris.

INTRODUCTION

Educational legislation and policy

The education sector (along with other government agencies) has the task of contributing to the achievement of national development goals espoused in the country's development plan. The general purpose and goals of education in the Philippines have been cited in the national constitution. Section 3(2), Article XIV of the Constitution states that:

All educational institutions shall inculcate patriotism and nationalism, foster love of humanity, respect for human rights, appreciation of the role of national heroes in the historical development of the country, teach the rights and duties of citizenship, strengthen ethical and spiritual values, develop moral character and personal discipline, encourage critical and creative thinking, broaden scientific and technological knowledge and promote vocational efficiency.

These goals have been translated into educational policies and further elaborated as the basic (elementary and secondary) education framework.

Elementary and secondary education

The 1982 Education Act identifies the aims of both elementary and secondary education. For *elementary* education, the aims are: (a) to provide the knowledge and develop the skills, attitudes and values essential to personal development and necessary for living in and contributing to a developing and changing social milieu; (b) to provide learning experiences which increase the child's awareness of and responsiveness to the changes in and just demands of society and to prepare him/her for constructive and effective involvement; (c) to promote and intensify the child's knowledge of, identification with, and love for the nation and the people to which he/she belongs; and (d) to promote work experiences which develop the child's orientation to the world of work and creativity and prepare him/her to engage in honest and gainful work.

The regional level basic education aims and objectives reflect those at the national level, but are modified to suit local conditions and concerns. For *secondary* education the aims are: (a) the provision of general education that was started at the elementary level; and (b) the preparation of students for college and/or the world of work.

Curriculum policies and legislation

Curriculum policies are usually set forth by the Department of Education, Culture and Sports through various orders, circulars, memoranda and bulletins. They are aligned with national priorities and contribute to the achievement of development goals. However, several laws passed by the national legislature specifically relate to the school curriculum: Section 3(10), Article XIV of the Constitution mandates the study of the Philippine Constitution; Section 6, Article XIV, designates Filipino as the language of instruction; Section 19(2), Article XIV, states that: "All educational institutions throughout the country shall undertake regular sports activities in co-operation with athletic clubs and other sectors". Republic Act No 4723 mandates music teaching in the schools. The most recent curriculum-specific laws designate: (a) lengthening of the school calendar from 185 to not less than 200 school days per school year; and (b) integration of concepts on human rights, the environment, dangerous drugs and computer education.

The Basic Education System

Basic education in the Philippines is free and compulsory at the elementary level only. The basic education system in the Philippines is composed of six years of elementary and four years of secondary education—a total of ten years. Compared to many countries, this is a relatively short time period. Filipinos complete their basic education at the age of 16 or 17 years. They then proceed to institutions of higher learning to obtain a post-secondary vocational/technical institution degree or a certificate. Table 1 provides a general overview of the country's basic education situation.

TABLE 1. The Philippine basic education system

Indicator	Elementary	Secondary	Total
Number of schools	38,631	6,673	45,304
Enrolment	9,354,451	3,940,587	13,295,038
Number of teachers	334,822	146,102	480,924
Number of children per class	34	32	
Enrolment rate	92.70%	62.25%	

Source: Office of Planning Service, 1998

Elementary and secondary schools are either government-supported or privately-funded. At the elementary level, the government schools constitute 92% of the total; at the secondary level, their share is 60%. The school year in the Philippines begins on the first Monday of June and ends on the last Friday of March. The school year for the elementary and secondary levels consist of not less than 40 weeks or 200 days. Class sessions are held Monday to Friday and the school year is divided into four grading periods.

Administrative structures of curriculum development

The education system is decentralized. The central/national office is engaged in policy formulation; while the regional and the division offices are the implementing bodies. Supervision of schools is accomplished at the regional and sub-regional levels.

THE CURRICULUM DEVELOPMENT PROCESS

Administrative structures of curriculum development

Development of the basic education level curriculum is the responsibility of the Central Office Bureau of Elementary and Secondary Education, Curriculum Development Divisions. This bureau defines the learning competencies for the different subject areas; conceptualizes the structure of the curriculum; formulates national curricular policies. These functions are exercised in consultation with other agencies and sectors of society (e.g. industry, socio-civic groups, teacher-training institutions, professional organizations, school administrators, parents, students, etc.). The subject offerings, credit points and time allotments for the different subject areas are also determined at the national level. In this sense, a national curriculum exists in the Philippines.

However, while curriculum implementation *guidelines* are issued at the national level, the actual *implementation* is left to school-teachers. They determine the resources to be used; teaching and assessment strategies and other processes. Furthermore, schools have the option to modify the national curriculum (e.g. content, sequence and teaching strategies) in order to ensure that the curriculum responds to local concerns.

Language of instruction

A *bilingual policy* is in use whereby both English and Filipino are instructional mediums. At the elementary level, English language, science and health are taught in English; while Filipino, civics and culture, good manners and right conduct (GMRC/character education), home economics, livelihood education, music, art and physical education are taught in Filipino. At the secondary level, English language, science, mathematics, technology and home economics are taught in English; while social stud-

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ies, values education, physical education, health and music are taught in Filipino.

Curriculum design

The approach to curriculum design in the country is based on content topic *and* competency. The Department of Education, Culture and Sports (DECS) prescribes competencies for the subject areas in all the grade/year levels. The DECS Bureau of Elementary and Secondary Education develops, publishes and disseminates these learning competencies to the field. Most of the subject/learning areas have a list of learning competencies expected to be mastered by the children at the end of each grade/year level and also at the end of elementary/secondary schooling. Some subject/learning areas have a combination of both (i.e. learning competencies under each content/topic). The curriculum is designed to be interpreted by teachers and implemented with variations. Schools are encouraged to innovate and enrich or adapt, as along as they have met the basic requirements of the curriculum.

In this context, the regional science high schools offer an enriched science and mathematics programme whereby students take additional science and mathematics subjects. In some private schools, English, science and mathematics subjects are taken in lieu of values education; this is because subjects like religion, moral values and ethics already have been incorporated. In addition, students are required to participate in co-curricular activities. These are managed by students with the teacher as facilitator/moderator (see Table 2).

Teaching methods and learning activities

The curriculum plan (learning competencies) does not present teaching methods and learning activities that teachers must follow in implementing the curriculum. The guiding philosophy is that the creativity of teachers is stimulated by the option to plan and use the appropriate teaching/learning activities independently. However, teacher's manuals or guides do incorporate higher-level content areas and suggestions for teaching and assessing.

Learning materials

Until 1987, the government directly managed and supervised the production and distribution of textbooks and manuals through the Instructional Materials Development Council (IMDC). However, this responsibility was transferred to private publishers with the passage of the Book Publishing Industry Development Act (RA 8047). This Act also provided for the adoption of multiple rather than single textbooks. Currently, learning materials and textbooks developed by the private sector are submitted for evaluation to the Instructional Materials Council Secretariat (IMCS)—an agency attached to DECS. Approved textbooks are listed in a catalogue from which school-teachers and principals select those that are to be purchased for their respective schools.

Other teaching/learning support materials available in the schools include guides or manuals, teacher support/, workbooks for students, apparatus for science and technology, and home economics, video and cassette tapes, educational computer software, charts, maps and models. All of these must also be submitted for evaluation at the national level before they can be released for purchased for school level use.

Evaluation

At the national level, the National Educational Testing and Research Centre (NETRC) has the task of administering the national achievement tests to students leaving the education sector. For grade VI this means administering the national elementary achievement test and, for year IV, the national secondary assessment test. The tests cover five subject areas and are based on the elementary and secondary level learning competencies. The examinations are administered annually, towards the end of the school year. The results provide the bases for policy formulation and educational reforms. At the regional and division levels, diagnostic and achievement tests are administered to a sample group depending on the availability of funds. No examination is required for admission to public secondary schools.

The purposes of the school-based assessments are: (a) to improve the teaching/learning process; (b) to identify students' strengths and weaknesses; (c) to determine the students' subject area performance and/or achievement levels and; (d) to report student progress to parents. Although there are four periods annually at both elementary and secondary levels where students are examined in each subject, formative and summative evaluation are undertaken regularly. Paper and pencil tests are the most common forms of examination in the schools.

ISSUES AND CONCERNS IN CURRICULUM DEVELOPMENT

Issues and concerns abound in almost every aspect of the Philippine curriculum development and implementation process and at every bureaucratic level. Several of these are described below. Table 4 provides an overview of the curriculum decision-making process.

TABLE 2. The new elementary school curriculum

LEARNING AREAS	Weekly time allotment (minutes)					
	Class I	Class II	Class III	Class IV	Class V	Class VI
Character-building activities	100–150	100–150	100	100	100	100
Filipino	300	300	300	300	300	300
English	300	300	300	300	300	300
Mathematics	200	200	200	200	200	200
Civics and culture	200	200	200	—	—	—
History /geography/civics	—	—	—	200	200	200
Science and health	—	—	200	200	200	200
Arts and physical education, home economics and livelihood education	—	—	200	200	200	200
Optional	—	—	—	200	300	300
Minutes per week	1,000–1,150	1,000–1,150	1,500	1,700	1,800	1,800
Minutes per day	220–230	220–230	300	340	360	360

TABLE 3. The new secondary education curriculum

Subjects	1st year		2nd year		3rd year		4th year		Total number of units
	Min.	Unit	Min.	Unit	Min.	Unit	Min.	Unit	
English	200	1	200	1	200	1	200	1	4
Filipino	200	1	200	1	200	1	200	1	4
Science and technology	400	2	400	2	400	2	400	2	8
Mathematics	200	1	200	1	200	1	200	1	4
Social studies	200	1	200	1	200	1	200	1	4
Physical education, health and music	200	1	200	1	200	1	200	1	4
Values education	200	1	200	1	200	1	200	1	4
Technology and home economics	400	2	400	2	400	2	400	2	8
Minutes weekly	2000	10	2000	10	2000	10	2000	10	40
N° of minutes daily	400		400		400		400		
N° of hours daily	6hrs 40'		6hrs 40'		6hrs 40'		6hrs 40'		

TABLE 4. The curriculum: who makes which choices?

ASPECTS OF THE SCHOOL CURRICULUM	CENTRAL LEVEL • DEPARTMENT • BUREAU (Elementary/Secondary) • NETRC	REGIONAL/DIVISION LEVEL • SUPERVISORS (Region, Division and District)	SCHOOL LEVEL • ADMINISTRATORS • TEACHERS • COMMUNITIES
AIMS AND OBJECTIVES	Formulates and determines educational aims and objectives supportive of national development goals.	Formulates and determines specific vision, mission and objectives of the region/division/district	Formulates the vision, mission and objectives of the school Determines specific cognitive, affective and psychomotor instructional aims and objectives
CURRICULUM PLAN	Develops national education policies, standards and programmes for curriculum implementation. Formulates learning competencies.	Implements and adapts educational programmes to suit regional/divisional needs and cultures	Implements budget of work based on the Learning Competencies Modifies/adapts the curriculum to learners of different needs and abilities
METHODS AND APPROACHES TO LEARNING	Conducts research/studies on innovative approaches and recommends those that are effective. Recommends strengthening of and continued use of effective methods	Conducts teacher training programmes on strategies found to be effective Conducts research, field tests and demonstrates new teaching methodologies	Uses appropriate methodologies and innovative approaches Employs activities that enhance lifelong and life-wide competencies
MATERIALS	Exercises control over evaluation and distribution of text-books and other educational materials	Supervises the selection and distribution of instructional materials to school divisions Ensures availability/adequacy of instructional materials	Supervises the use of instructional materials by learners and teachers Procures materials based on approved list Adopts indigenous learning materials
EVALUATION AND EXAMINATION	Administers national examinations Conducts studies/research on student performance	Conducts supervisory visits Provides technical assistance Administers examinations	Administers formative and summative tests; uses results to improve teaching-learning process Makes report of student performance to parents, school officials

Design

In addition to the fact that the Philippines has one of the shortest time spans for the completion of basic education, studies point to curriculum *overcrowding*. Every day, learners must study and do homework in seven of the eight subject areas. When combined with the learning competencies required for each grade/year level, this has proven to be excessive. Reports that science and mathematics content cannot be completed in one school year have confirmed this observation. In this context, a backlog occurs and a carry-over of the previous year's content and competencies to the following school year adversely affects the teaching/learning process. Furthermore, the *scope* and *sequencing* of education (from elementary to secondary level) have also been identified as design defects. Here, content and skills gaps—as well as overlaps and duplications—have emerged. While overlap and duplication further aggravate the curriculum overload, the gaps have helped to produce elementary school graduates who are not entirely ready for secondary school.

Frequently, the inability to limit the number of core or basic subjects has led to curriculum overload. The national examinations are limited to the five subject areas of English, Filipino, science, mathematics and social studies. Very few concepts are included from other subject areas. However, lobby pressure from professional groups to include or increase the time allotments for other subjects has had an impact (i.e. subject area practitioners who demand home economics teaching for both sexes, or an increased time allotment for physical education) with the result that programming problems have occurred.

Implementation

For the nationwide implementation of the present school curriculum, there has been massive training of schoolteachers and orientation of school heads and supervisors. However, the national-level training of trainers' programme was watered down at the regional and division levels and this affected the school implementation.

Another major concern is the availability of instructional materials—most of the time there are none or, if available, they are inadequate. The instructional materials deficit includes not only the students' textbooks and teachers' manuals, but also science and vocational subject facilities, equipment/apparatus and supplementary teaching/learning materials. Other barriers to effective curriculum implementation are large classes, teacher availability (for the specialized secondary subject areas) and quality of instructional supervision.

Follow-up

Three main concerns regarding the institutionalization of curriculum reforms are the quality of local leadership, monitoring and evaluation, and sustainability.

Local leadership is critical to a smooth reform implementation. Since the local/field offices are the implementing bodies, institutionalization of the reform is dependent on their priorities and capabilities. Unfortunately, curriculum improvement is often a low priority for local education leaders. The result is curricular reform misimplementation; or misinterpretation of guidelines and procedures.

Monitoring and evaluation of curriculum implementation are also key activities that are not effectively attended to. For example, not all the elementary schools are visited because there are so many of them. Also, the secondary schools are seldom visited because supervisors are unable to provide technical assistance on specialized subject matter. While supervisors at the regional level are subject specialists, those at the division level are mostly generalists.

Because most reforms are foreign-funded, post-funding sustainability is usually a concern. Sustainability concerns encompass not only the financial aspects—rather more frequently, it is the technical and management aspects that are problematic. In most cases, the success of a reform depends on the quality and feasibility of the proposals/plans for sustainability.

CURRICULAR REFORMS IN THE PHILIPPINES

Reform rationale

The results of a comprehensive appraisal of the Philippines education system revealed that a great deal was desired as far as the quality of education was concerned. There was a need for students to develop higher critical, logical thinking skills; communication skills, values development and/or general manual skills for higher education or the world of work.

It was also projected that, due to financial difficulties, students would remain in the government schools and families would begin to move away from the private schools to less expensive public schools. Therefore, the public school sector had to be prepared to accept anyone wishing to complete basic education. The comprehensive appraisal reports became the basic reference documents for improving the quality and efficiency of the education system, and enhancing its utility in terms of access and equity.

Finally, it was recognized that, unless greatly improved, the system's existing capacity would be unable to cope with the educational demands generated by the escalating competitiveness of a growing technological society. Thus, the curricular reforms were also undertaken in order to meet the constant new demands being made on the system.

Reform implementation

The reforms were implemented after project preparation was undertaken (with the assistance of a foreign-funding organization). Two major initiatives were launched. Both were geared towards *overall quality, access and efficiency* improvements in education sector performance—during and beyond the project cycle. New curricula, with mass training of teachers, were components of the *Program for Decentralized Education (PRODED)* and the *Secondary Education Development Program (SEDP)* which focused on the elementary and secondary levels, respectively.

The PRODED was funded with a loan from the International Bank for Reconstruction and Development (IBRD). The project aimed to introduce improvements in

policy, management and other sectoral concerns in order to achieve greater efficiency and effectiveness in the operation and administration of the elementary education system. One of the sub-projects was curriculum development.

The SEDP was premised on the fact that the PRODED would bring about higher quality and an increased secondary education student intake. After six years of implementation of the new elementary education curriculum, the 1989 elementary school graduates became the first students for the new secondary education curriculum.

Outcomes

The reforms at the elementary and secondary levels have been implemented over the last fifteen and nine years, respectively. Current indicators are that PRODED and SEDP have indeed succeeded in improving the quality of basic education and in making the sector more effective and efficient in the delivery of basic educational services.

As for outcomes related to the implementation and management of reform, the PRODED and SEDP have meant added responsibilities and accountability for all those involved—from policy makers to programme implementers and target beneficiaries. Mechanisms and structures needed for the efficient implementation of the reforms have been given priority. Competencies of those involved in curriculum development and implementation are upgraded regularly, so that they may discharge their functions and responsibilities more effectively. Lessons learned from the reform implementation are providing useful baseline information for future reform and development programmes.

The curriculum is continuously undergoing refinement to ensure its relevance to changing needs and demands. The ongoing basic education curriculum review has provided for more indepth indigenization/localization of the curriculum and integration of information technology or multimedia resources in the teaching/learning process. Benchmarking has provided valuable and reliable data about school and student performance. At this point in time, significant improvements in the learners' and schools' performances have been recorded. See Table 2 for an overview of curricula.

Future prospects

In the context of international assessments, the educational performance of the Philippines still needs a lot of improvement. The need for the curriculum to develop students who are *globally competitive* is another factor with which the educational sector will have to contend in the future.

Sri Lanka

Curriculum design and implementation for upper primary and general secondary education

A. Karunasinghe and K.W. Ganasundara

Estimated population (1995)	17,900,000
Public expenditure on education as percentage of Gross National Product (1995)	3.0
Duration of compulsory education (years)	11
Primary or basic education	
Pupils enrolled (1995)	1,962,498
Teachers (1995)	70,537
Pupil/teacher ratio	28 :1
Gross enrolment ratio (1995)	
—Total	113
—Male	114
—Female	112
Net enrolment ratio (1995)	
—Total	100
—Male	100
—Female	100
Estimated percentage of repeaters (1995)	2
Estimated percentage of drop-outs (1995)	2
School-age population out of school (1995)	–
Secondary education	
Students enrolled (1995)	2,300,000
Gross enrolment ratio (1995)	
—Total	75
—Male	71
—Female	78
Third-level enrolment ratio (1995)	5.1
Estimated adult literacy rate (1995)	
—Total	90
—Male	93
—Female	87

Source: UNESCO statistical yearbook, 1998, Paris

ORGANIZATIONAL STRUCTURE OF CURRICULUM DEVELOPMENT

In Sri Lanka, the Ministry of Education and the National Education Commission are responsible for all curriculum-related policy making. However, the National Institute of Education (NIE) has the overall responsibility for curriculum design and development, preparation of syllabi, teacher's guides and textbooks. A council empowered to take all policy and high-level administrative decisions on matters coming under its purview governs the NIE. Its staff consists of curriculum teams of specialist officers and is augmented by teacher educators and teachers seconded for service to the respective teams. Consultation takes place during the curriculum development process and subsequent implementation, with subject specialists and professionals outside of NIE, as well as affected parties, (i.e. teachers, students, parents and prospective employers).

EDUCATIONAL GOALS

Sri Lanka's educational goals can be summarized as follows:

- To develop and understand the cultural and religious heritage and the democratic traditions of the country, as well as an appreciation of the contributions made by the different ethnic groups to the national culture;
- To develop a basic understanding of the environment and skills relevant to the needs of life and society;
- To cultivate an appreciation of the arts, literature and science;
- To develop attitudes conducive to harmonious relations among the different ethnic groups;
- To promote moral, spiritual and physical development;
- To inculcate a sense of commitment to national development;
- To develop and promote a system for the acquisition of technical knowledge and vocational skills to meet the manpower needs of the country;
- To promote lifelong education and knowledge renewal through programmes of formal and non-formal education;
- To promote the democratization of education.

PRE-REFORM EDUCATION SYSTEM AND CURRICULUM

Prior to the education reform initiatives in Sri Lanka, the formal pre-tertiary education system consisted of four stages: primary: grades 1-5; junior secondary: grades 6-8; senior secondary: grades 9-11; collegiate: grades 12-13. There was a commonly prescribed curriculum for grades 1 to 11.

The lower primary stage was characterized by a *highly integrated* curriculum (first language, mathematics, environmental studies, creative-aesthetic activities, and religion). In the upper primary stage, the curriculum was *semi-integrated*, with more emphasis on subject competencies. At this level, a beginning science course and English as a second language were introduced.

At the secondary stage, the curriculum consisted of the following subjects, some of which were inter-disciplinary in nature: religion, first language, English, mathematics, integrated science, social studies, and history, aesthetic education and a life-skills/technical subject. At the end of grade 11 (which is also the end of general education) the General Certificate of Education Ordinary Level (GCE 'O'-Level) examination is administered.

EDUCATIONAL REFORM

A new structure for primary education

The Sri Lankan education system is now in the process of being restructured and a number of curriculum reforms are planned or are already underway. A new primary level structure intended to be more suitable to the proposed curriculum reform is being implemented. As a result of this change, grades 1-5 will constitute a *primary stage segment*. Under this framework, the primary cycle is divided into three ***key stages*** (KS): KS-1, grades 1 and 2; KS-2, grades 3 and 4; and KS-3, grade 5.

Objectives of the reform

The new, reformed primary education programme objectives listed below have evolved from the larger framework of national education goals, namely:

- development of a child-centred curriculum;
- development of essential as well as desirable competencies during the key stages;
- training of primary grade teachers to implement the revised curriculum;
- provision of adequate facilities and materials to all primary schools;
- establishment of an equal opportunity network throughout the country.

The new curriculum

The reforms will see the countrywide introduction of a highly integrated curriculum at the lower primary stage, with the subject-area *environment-related activities*, which encompasses several disciplines. Another notable modification related to integration of content is the introduction of activity-based oral English in KS-1. The objective is to create a classroom environment where children and teachers use a mix of mother tongue and conversational English. Appropriate vocabulary will be developed through activity learning and games. Additionally, there is a provision for co-curricular work in all the key stages.

The number of subject areas in the curriculum is now being limited to four: (1) languages; (2) mathematics; (3) religion; and (4) environment-related activities. In the languages component, the formal teaching of English, beginning with KS-2, is being introduced; as well as a second national language (Sinhala/Tamil)-from KS-3.

In the past, even at primary level, the *content* of subjects received the greatest emphasis. However, nowadays the focus will be placed on *competencies* that children are expected to have acquired at the end of their general education (Table 1). This new curriculum establishes a comprehensive set of basic competencies in communications, ethics and religion, environment, learning, enjoyment and leisure. Entry competencies will also be identified, using specially designed assessment instruments, enabling the grade 1 teacher to cater more effectively to children's individual needs. Furthermore, the essential competencies that children are expected to have mastered at the end of each key stage will be identified and this information made available to teachers. Teachers will be encouraged to ensure that at the end of each KS, almost all children in their class have reached the mastery level in the essential competencies, with special emphasis on first language and mathematics. In this context, the practice will be to assign the same class teacher for KS 1 and KS 2.

The new teaching/learning methodology will incorporate an appropriate mix of play, activity and deskwork, the proportion of each component varying gradually with successive grades. The new curriculum also incorporates cross-age play and activity opportunities, where KS-1 children interact with children from grade 6.

There will be continuous classroom-based assessment, with increased emphasis on the use of informal methods. This represents an attempt to deviate from past assessment techniques (which encourage comparative student achievement) and move towards criterion-referenced assessment techniques. Entry competency tests for grade 1 and terminal competency tests at the end of each key stage will be developed.

The remaining tasks to be carried out include: preparation of a classroom-based evaluation framework; development of training material; and the training of teachers and supervisors. A booklet will be produced on improving testing techniques. Also, a research committee will be set up to carry out action research, surveys and evaluation on special areas, such as group work, multi-grade, multi-level teaching, gifted children and on-going aspects of the curriculum development process, including teacher training.

TABLE 1. New primary stage competencies

Communications: comprises three subsets: literacy (listening attentively; speaking clearly; reading with understanding; writing accurately and lucidly); numeracy (using numbers: counting, calculating, measuring systematically); graphics (making sense of line, form; expressing and recording details, instructions, ideas, with line, form and colour).

Environment: comprises three parts: **social** (social awareness and relationships, personal conduct, rights, responsibilities, duties and obligations); **biological** (awareness, sensitivity and skills linked to the living world, man and the ecosystem.); **physical** (awareness, sensitivity and skills relating to space, energy, fuels, matter, materials and their links with human life. Also included are the skills in using tools to shape and form materials for living and learning).

Ethics and religion: comprises *values* and *attitudes* deemed essential for individuals to assimilate, so that they may function in a manner consistent with the ethical, moral and religious modes of conduct.

Play and leisure: related to human emotions that find expression in play, sports and various leisure pursuits essential for mental and physical well-being. They are also connected with such values as: co-operation, team work, healthy life and work competition. Also included are aesthetic and creative activities.

Learning to learn: related to human needs in a rapidly changing, complex, crowded world where learning will require constant review and updating. Includes developing skills of awareness, attentiveness, and perseverance. The information revolution has rendered this competency essential.

Resource materials

A steering committee will decide on the content and layout of textbooks and select the panel of writers who will be registered with the National Institute of Education (NIE). Books will be reviewed by a panel and approved by the steering committee prior to publication. Additional resource materials for primary classes will be prepared at the level of the school, the resource centre and the province with NIE assistance. The Education Publication Department (MOE) and NIE are collectively responsible for printing and distributing teaching and resource materials.

Implementation schedule

The new primary curriculum was introduced in 1998 as a pilot project in grade 1 of Gampaha district, and introduced to the whole country during 1999. It will be progressively implemented at each grade level, terminating in grade 5 by 2003.

Teacher education

A profile of the primary school-teacher will be developed based on the vision of the primary school for the twenty-first century. Essential teacher competencies and attitudes will be identified and a new pre-service teacher education curriculum and training materials developed. The staff of colleges of education and other teacher-training institutes will undergo orientation programmes. Each training college will adopt a *problem-solving school* in its catchment area in order to conduct field-based activities. In-service training of primary teachers will be an integral part of the reform. The Master Teacher Programme will be strengthened.

School managers

As the primary section forms a part of the main school in Sri Lanka, an assistant principal or a senior teacher will be entrusted with responsibility for the primary section of the main school. In schools where there is a large number of pupils, additional adequate supervisory assistance will be provided (i.e. sectional or grade co-ordinators). Anticipated school-level management tasks include: establishing a primary education development committee; strengthening parent/community relations; formalizing collaboration with neighbouring schools through the formation of *school families*; developing and implementing an internal supervisory mechanism for teacher self-evaluation, as well as collegial peer evaluation.

Provincial administration

The provincial administrative structure will also be strengthened, with a separate primary education division in the Provincial Department (PPEU) being established under a senior officer. The appointment of officers responsible for primary education at the zonal level operating under the PPEU is also foreseen, as well as the creation of primary education development committees in both provinces and zones, comprised of principals, teachers, parents and community leaders.

Public awareness

This will be carried out through a mass media publicity programme involving newspapers, radio and TV and targeting school staff, parents, influential youth groups as well as the general public.

TABLE 2. The curriculum: who makes what choices?

	CENTRAL LEVEL • MINISTRY • NATIONAL INSTITUTE OF EDUCATION • NATIONAL EDUCATION COMMISSION	REGIONAL/PROVINCIAL LEVEL • PROVINCIAL MINISTRY	SCHOOL LEVEL • HEADS • TEACHERS • COMMUNITIES
NATIONAL GOALS AND BASIC COMPETENCIES	Sets national goals and competencies (Ministry and NEC)		
AIMS AND OBJECTIVES	Sets aims and objectives for subjects (NIE)		
CURRICULUM PLAN	Writes national syllabus and decides time allocations (NIE)		Handles implementation and provides feedback
METHODS AND APPROACHES TO LEARNING	Recommends approaches to be used. Trains master teachers in the use of certain methodologies (NIE)	Trains teachers with the help of master teachers. Supervises teacher training	Sets school policy programmes, project work, activity-room work
MATERIALS	Writes teacher's guides, textbooks (NIE)		Prepares certain teaching materials
EVALUATION AND EXAMINATION	Sets central examination grade 5 GCE 'O'-level & 'A'-level	Sets some provincial examinations	Handles on-going assessment. Sets all internal tests and examinations

TABLE 3. Number of periods for subjects/subject areas for grades 6 to 11

Subject	Number of forty-minute periods per week					
	Grade 6	Grade 7	Grade 8	Grade 9	Grade 10	Grade 11
Religion	3	2	2	2	2	2
First language	5	5	5	5	5	5
English	5	5	5	5	5	5
Maths	5	6	6	6	6	6
Environmental studies	9	—	—	—	—	—
Science & technology	—	6	6	6	6	6
Aesthetics	4	3	3	3	3	3
Sinhala/Tamil as a 2nd language	2	2	2	2	—	—
Social studies/history	—	5	5	5	5	5
Life skills	—	3	3	3	—	—
Technical subjects	—	—	—	—	4	4
Groups activities	3	—	—	—	—	—
Additional subjects	—	—	—	—	4*	4*
Total periods per week	40	40	40	40	40	40

FUTURE PROSPECTS FOR CURRICULAR REFORM

Junior secondary stage

In the near future it is projected that grades 6-9 will constitute the junior secondary stage of education, thereby functioning as the upper section of the junior school. Grade 6 will become the *bridging* year between the integrated curriculum of primary school and the subject based curriculum of secondary school. It will serve to inculcate the necessary study skills for secondary education while reinforcing the essential competencies to be acquired during the primary cycle, particularly in language and mathematics. The syllabi in grade 6 will be revised to meet these requirements.

There will be a common curriculum at this stage, comprising 9 subjects: first language, English, mathematics, science and technology, social studies, life skills, religion, aesthetics, health and physical education. (The teaching of a second national language, i.e. Sinhala for Tamil speaking students and Tamil for Sinhala speaking students will also be introduced at this level -when teachers are available.)

At the end of grade 9, a school-based examination, the *Junior School Proficiency Examination*, will test pupil achievement and result in the issue of a certificate.

Teaching methodology will emphasize learning through projects and practical work, as spelt out in the section on practical skills education. Concepts on peace education, conflict resolution, democratic values, human rights and environmental conservation will be integrated into social studies and other relevant subject content.

Implementation plan

The revision of syllabi and course guides, training of teachers and provision of facilities were scheduled to be for completion at grade 6 level in 1998 and for implementation in January 1999. Reforms will be progressively introduced to grades 7 and 8 with the grade 9 curriculum revised in line with the new GCE "O" level curriculum.

Senior secondary stage

The present curriculum at this level is oriented to the GCE (OL or AL) examinations. The programme covers a period of 3 years; namely grades 9,10,11 for GCE (OL) and 2 years for GCE (AL) Collegiate level grades 12-13.

At present, the GCE (OL) compulsory curriculum consists of the following subjects (some of which are inter disciplinary in nature): religion, first language, English, mathematics, integrated science, social studies and history, aesthetic education and life skills/technical subjects. In grade 9, students select 1 vocational type course (out of 53 such courses). In grades 10-11, 1 technical subject may be chosen from several options.

Under the proposed revisions, the time period for senior secondary education will be reduced to 2 years with classes designated grades 10 and 11. The curriculum will be made more flexible with the introduction of a number of core subjects and a number of optional subjects. Core subjects will be: religion, first language, English, mathematics, science and technology, social studies and history, aesthetic studies. Students will be permitted to select up to 3 optional subjects from the following: Sinhala/Tamil as a second language, history, geography, health and physical education, literature (Sinhala/Tamil/

English), modern or classical languages, technical subjects (from the list of approved technical subjects).

Under the reform, grade 11 remains the end of the general education for all stages. Students sit for the General Certificate of Education Ordinary Level (GCE-OL) examination, which is a centrally planned, national school leaving examination. Only those students who achieve certain prescribed GCE-OL standards are permitted to enter the collegiate stage (about 25-30% of students).

Improving English language teaching in Sri Lanka

A special effort is being made to improve English language skills as it is realized that a better knowledge of English will improve employment opportunities and facilitate communication with the outside world. The Englisanguage teaching programme will be upgraded to provide opportunities for pupils island-wide to have equal access to English learning for comprehension and communication. Teachers of English will be provided with opportunities and incentives to improve their proficiency in English and skills in teaching English.

Thailand

Curriculum planning, development and reform

Kiat Ampra and Chadjane Thaithae

Estimated population (1995)	58,200,000
Public expenditure on education as percentage of Gross National Product (1995)	4.1
Duration of compulsory education (years)	6
Primary or basic education	
Pupils enrolled (1995)	5,961,855
Teachers (1995)	–
Pupil/teacher ratio	20 :1
Gross enrolment ratio (1995)	
—Total	87
—Male	–
—Female	–
Net enrolment ratio (1995)	
—Total	97
—Male	98
—Female	97
Estimated percentage of repeaters (1995)	12
Estimated percentage of drop-outs (1995)	20,000
School-age population out of school (1995)	
Secondary education	
Students enrolled (1995)	3,794,290
Gross enrolment ratio (1995)	
—Total	55
—Male	–
—Female	–
Third-level enrolment ratio (1995)	20.1
Estimated adult literacy rate (1995)	
—Total	94
—Male	96
—Female	92

Source: *UNESCO statistical yearbook, 1998*, Paris

INTRODUCTION

The year 2000 will be a year of learning reform in Thailand. In the previous decade, economic growth based on industrial production was rapid, but did not enhance the overall quality of life for the majority of the population. The current economic crisis has heightened the need for educational reform so that citizens are better equipped to cope with present socio-economic demands.

GOALS

Primary education in Thailand aims at developing the *quality of life* of learners so that they can properly serve society, assuming their roles and responsibilities as good citizens under a democratic constitutional monarchy. To achieve this goal, each learner is to be equipped with the basic knowledge and skills necessary for: daily living; adjustment to social changes; good physical and mental health; effective work and happy, peaceful living.

THE PRIMARY CURRICULUM

The objectives of the primary curriculum are to provide: (a) basic education for all; (b) experiences useful for daily living; and (c) education for national unity with common purposes. In this context, local authorities are given the opportunity to develop part of the curriculum—rendering it suitable for local conditions and needs.

The curriculum experiences provided for learners comprise five areas:

1. *tool subjects:* Thai language and mathematics;
2. *life experiences:* the process of solving social and daily life problems (with an emphasis on scientific process skills for better living);
3. *character development*: activities necessary for developing desirable habits, values, attitudes and behaviours leading to an acceptable character;
4. *work-oriented experiences*: general and practical work experiences and basic knowledge for career preparation;
5. *special experiences*: activities based on learners' interests.

Area 5 is provided for learners in grades five and six only. Experiences provided may include knowledge and skills selected from the other four areas or activities based on learners' interests, i.e. English for everyday life. Schools may select as many activities as desirable. The curriculum

aims to develop the following skills, knowledge and attitudes in learners,

1. Basic learning skills, retention of literacy and mathematical skills;
2. Knowledge and understanding about self, the natural environment and social changes;
3. Ability to take care of personal and family health;
4. Ability to identify causes of personal and family problems and to apply scientific reasoning skills to suggest ways and means of solving them;
5. Pride in being Thai, unselfishness, fair-mindedness and the ability to live happily with others;
6. Habits of reading and lifelong learning;
7. Basic knowledge and work skills, good work habits and the ability to work co-operatively with others;
8. Knowledge and understanding of social conditions and changes at home and in the community; ability to carry out the roles as a good family and community member; a sense of responsibility to conserve and develop the environment; to promote religion, arts and culture in the community.

Time allotments

The total time allotment for the primary curriculum is about six academic years, with not less than forty weeks for each academic year and not less than twenty-five hours or sevety-five periods per week. The time allotted for each period is twenty minutes. Collectively, learning periods cannot be less than 200 days or 1,000 hours. See Table 1 for details.

TABLE 1. Approximate time allotments in the primary curriculum

	Approximate time allotments: primary curriculum					
	Grades 1–2		Grade 3		Grades 5–6	
	%	Periods/year	%	Periods/year	%	Periods/year
Tool subjects	50	1,500	35	1,050	25	750
Life experiences	15	450	20	600	25	750
Character development	25	750	25	750	20	600
Education for work	10	300	20	600	30	900
Total	100	3,000	100	3,000	100	3,000
Special experiences	—	—	—	—	—	600

Note: There are three periods of twenty minutes in one hour.

IMPLEMENTATION GUIDELINES

To achieve the educational aims, curriculum orientation guidelines have been established as follows:

1. Organizing teaching/learning activities that:
   - Are relevant to conditions and needs of the communities by providing opportunities for local authorities to develop part of the curriculum, as well as instructional aids appropriate to their localities that are learner-centred, making the activities relevant to the learners' needs and living conditions and providing equal opportunities for them to develop according to their respective abilities;
   - Maximize linkages and integration of subject matter, the learning experiences within each area and between different experience areas;
   - Emphasize learning processes, logical and creative thinking and group processes;
   - Promote learning by doing and emphasize development of concepts in all areas of experience.
2. Organizing research studies, follow-up and continuous remedial teaching;
3. Regularly integrating moral education and desirable values into the teaching/learning process, as well as in extra-curricular activities;
4. Organizing an environment and general climate within the school conducive to learning and to the practical activities of learners.

MEASUREMENT, EVALUATION AND FOLLOW-UP

School administrators and classroom teachers are responsible for measurement, evaluation and follow-up in order to determine mid-year and end-of-year learner promotions. Teachers are expected to carry out formative and summative evaluations periodically based on subject content and experiences, in conformity with the Ministry of Education's prescribed evaluation regulations. However, for the area of *special experiences*, measurement and evaluation are designed to assess learners' involvement in activities and are not used as criteria for class promotion.

SECONDARY EDUCATION

Goals and aims

Secondary education also aims to improve the learner's quality of life and serves as the basis for further education. It should: (a) help learners discover their own abilities, aptitudes and interests; (b) provide a general education as the basis for securing honest occupations or further education; and (c) respond to the needs of the localities and the nation. Based on these aims, the curriculum is designed to permit learners to develop the following characteristics:

1. Knowledge and skills in general education subjects and the ability to keep up with academic advances;
2. The ability to maintain and enhance personal and community health and hygiene;
3. The ability to analyse community problems and choose suitable alternatives for solving them—taking into account various limitations;

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TABLE 2. The secondary curriculum

1. Compulsory courses: 57 learning units (credits)	Credits
Core compulsories	39 units
Thai	12 units
Sciences	9 units
Mathematics	6 units
Social studies	6 units
Health and physical education	3 units
Art education	3 units
1.2 Elective compulsories: 18 units (credits)	
Social studies	6 units
Health and physical education	6 units
Work education	6 units

2. Free elective courses: To be selected from the following—33 units	
2.1	**Languages** Thai Foreign languages
2.2	**Sciences/mathematics** Sciences Mathematics
2.3	**Social studies**
2.4	**Personality development** Health and physical education Art education
2.5	**Work and vocation** Vocational education
3	**Activities in accordance with the Ministry of Education's regulations are to be organized in educational institutions under the responsibility of the Ministry of Education**
3.1	Boy Scouts, Girl Scouts, Red Cross Youth, Girl Guides
3.2	Extra-curricular activities
3.3	Guidance/remedial education or academic development activities
3.4	Independent activities

4 Pride in being Thai; ability to live in peace with others and to willingly help others—within the limits of one's capability;
5 Creativity, ability to devise and improve practices which will bring about individual and community progress;
6 Good attitudes towards all kinds of honest occupations; love of work and ability to choose occupations relevant to one's aptitudes and interests;
7 Basic skills for carrying out honest occupations; skills in management and in working co-operatively with others;
8 Understanding social conditions and changes in one's community; the ability to suggest ways of community development; pride in assuming one's roles, duties as a good community member; knowledge of how to conserve and develop the environment, religious and cultural heritage of the community.

IMPLEMENTATION CRITERIA

This revised edition of the lower secondary school curriculum has the following main features:

Duration

The full course requires approximately three years or six semesters. Each academic year is divided into two semesters, with twenty weeks per semester. A school may offer a summer semester, as deemed appropriate. Each week consists of no less than five learning days, at least seven periods per day (one period is fifty minutes long). At least thirty periods per week are to be allocated to regular teaching/learning in accordance with the curriculum.

Learning units/credits

One unit is given to any subject requiring two learning periods per week per semester. Subjects requiring more or less than two learning periods are assigned appropriate proportional units.

Compulsory courses/free elective courses

The learners must take compulsory *and* free elective courses as specified in the structure of the curriculum. Learners may choose only one foreign language.

Evaluation of learning

Evaluation of learning and transfer of credits must conform to the Ministry of Education's regulations.

Criteria for course completion

The completion requirements are: (a) ninety units of compulsory and free elective courses as specified in the curriculum and satisfactory learning outcomes for all subjects; (b) passing the Thai language and social studies core compulsories; (c) obtaining a minimum of eighty units; (d) participating in the curriculum specified activities with at least 80% attendance and having satisfactorily achieved all the major objectives of the activities.

Organizational structure

Table 3 provides an overview of the key agencies involved in curriculum development and implementation at each level of the system as well as their respective roles and responsibilities.

TABLE 3. The curriculum: who makes which choices?

	CENTRAL LEVEL CURRICULUM CENTRE	REGIONAL LEVEL EDUCATIONAL REGIONS	SCHOOL LEVEL TEACHERS
AIMS AND OBJECTIVES	Department of Curriculum and Instruction, Ministry of Education, establishes goals and aims.	In each educational region, a local syllabus experience component is designed (for primary level) and work-oriented education (for lower secondary level); the objectives and contents relate to each other, but do not conflict with aims and objectives at the central level	
CURRICULUM PLAN	Curriculum Development Centre, Department of Curriculum and Instruction Development, Ministry of Education, establishes structure and time allotment.		1. All teachers make detailed teaching plans for each semester or each academic year. The contents cover only topics and main points. 2. Teachers make their own lesson plans for each hour to cover: 2.1 Behavioural objectives; 2.2 Detailed contents that relate to objectives and apply the scope of contents to suit local situations (based on the community, environment and daily life—including local employment).
METHODS AND APPROACHES TO LEARNING	Curriculum Development Centre, Department of Curriculum and Instruction Development, Ministry of Education, works on guidelines for implementation to achieve the aims.		2.3 Teaching and learning activities are related to objectives and contents; focus on learning by doing as in: experiments, reading, writing, mathematics skills, public speaking and workshops. External trainers are necessary; they can be selected by the community.
MATERIALS	Ministry of Education supports purchase of expensive materials, such as laboratory equipment, reference books, computers, audio-visual and workshop equipment, reading books for students	Some communities support more expensive equipment, such as audio-visual , television and video players	Learning supports: reading books, pictures, word cards, CD-ROMs, cassettes, tapes and videos are provided by teachers. Some other teaching materials can be produced by the teachers.
EVALUATION AND EXAMINATION	The evaluation regulations are prescribed by the Ministry of Education		School administrators and classroom teachers are responsible for measurement, evaluation and follow-up to improve teaching and learning and to determine mid-year and end-of-year promotion for learners, according to their abilities. They should also carry out periodic formative and summative evaluations of contents and experiences.

CURRICULA ADAPTATION: OUTCOMES AND ISSUES

Implementation

The most important problem here is how to change learning and teaching behaviours. According to the curriculum orientation guidelines, teachers should be focusing on: (a) integrating content from daily life; (b) making greater use of activities, rather than textbooks; (c) using different learning materials in a variety of ways; (d) making students the centre of learning activities; and (e) reducing explanation and helping students *construct* knowledge from various sources. But in the real classroom situation, the teacher-centred approach still dominates. Basically, teachers still dictate to students and still place emphasis on textbook content. Few teaching materials are used.

Some of the reasons for this are: (a) teachers are afraid that students cannot obtain the necessary fundamental knowledge through activities; (b) current assessment techniques still emphasize knowledge and understanding; (c) entrance examinations to the secondary level and higher education is still based (mainly) on summative knowledge, as opposed to other abilities; and (d) it takes more time to prepare and teach according to the designated teaching/learning curriculum orientations. It is anticipated that all these problems will be solved in the forthcoming process of reforming curriculum and learning activities.

Follow-up

The follow-up of curriculum implementation is not being adequately undertaken because of an insufficient number of external supervisors. In fact, this task is poorly implemented, because the external supervisors' innovations and methods do not relate well to real school situations. There are some *internal* supervision problems as well; the school principals have little understanding of curriculum and teaching methods, and they tend to pay less attention to academic development. Furthermore, most of the teachers have negative attitudes toward internal supervision.

FUTURE PROSPECTS

The Thai primary and lower secondary curricula have now been in use for over twenty years. Since (in principle) curriculum development is related to socio-economic conditions, this means that the curricula in use still relate (for the most part) to the social conditions prevailing in 1978—the date when they were initially adopted. (Notwithstanding, there were two subsequent revisions to the lower secondary curriculum in 1990). As mentioned at the outset, it is in this context that Thailand plans to implement major reform of the curriculum and learning activities, beginning in 2000.

The post-reform education system

Goals. The reforms will emphasize:

- Providing basic education for all (especially *the equality of being*);
- Providing education for adjusting oneself placidly to the changing society and creating social learning;
- Providing education that embraces *international* norms (i.e. using high technology, respecting human rights; being generous to children, women; facing new problems, etc.).

Structure. To achieve the objectives, the structure of the school system will be reorganized, in concert with reforms to the basic education curriculum and learning activities. It is expected that the class levels will be grouped into the following four sections:

- first grade-third grade;
- fourth grade-sixth grade;
- seventh grade-ninth grade;
- tenth grade-twelfth grade.

Curriculum. The basic education curriculum will focus on developing the learners' emotional, physical, social and mental capacities, resulting in the following characteristics for each individual:

- high ethical conduct and values, and the ability to work and live happily in both Thai and global society;
- good health, well-rounded personality and a sense of aesthetics;
- the ability to think, solve problem and adopt a very broad vision;
- knowledge, good skills and capacity for lifelong learning;
- a sense of nationalism and good citizenship (for a system based on a democratic monarchy);
- creativity, ability to participate competently in the global society.

Curriculum orientations. There will be four main orientations: (1) *learning details*: self-development, art education, social studies, Thai language, mathematics, science and technology, work-oriented experiences, foreign languages; (2) *organizing learning details*: focused on basic and selected local needs—also on knowledge, skills ethics and values; (3) *projects*—this is a *key* component consisting of project work for learning and meeting students' interests; (4) *social* activities focused on social development.

Teaching/learning approach. The main thrust will be on effectively using the *child/student-centred* approach. Teachers will design relevant activities by which students can themselves construct and follow up knowledge. This will include activities designed: (1) to cater to individual students' needs and abilities; (2) to permit students to select options according to their own interests; (3) to organize extra-school and classroom-based teaching and learning activities; (4) to facilitate student-lead learning activities with teachers acting as advisors and facilitators; (5) to evaluate individual student progress (based on authentic assessment, as well as student self-assessments).

Viet Nam

Curriculum planning, development and reform

Nguyen Thi Minh Phuong and Cao Thi Thang

Estimated population (1995)	73,800,000
Public expenditure on education as percentage of Gross National Product (1995)	2.7
Duration of compulsory education (years)	5
Primary or basic education	
Pupils enrolled (1995)	10,029,000
Teachers (1995)	288,200
Pupil/teacher ratio	34 :1
Gross enrolment ratio (1995)	
—Total	114
—Male	–
—Female	–
Net enrolment ratio (1995)	
—Total	–
—Male	–
—Female	–
Estimated percentage of repeaters (1995)	–
Estimated percentage of drop-outs (1995)	–
School-age population out of school (1995)	–
Secondary education	
Students enrolled (1995)	3,794,290
Gross enrolment ratio (1995)	
—Total	47
—Male	–
—Female	–
Third-level enrolment ratio (1995)	4.1
Estimated adult literacy rate (1995)	
—Total	94
—Male	97
—Female	91

Source: UNESCO statistical yearbook, 1998, Paris

BACKGROUND

Rationale for educational reform

In April 1991, the seventh Congress of the Communist Party of Viet Nam put forward a new national programme and strategy for socio-economic stabilization designed to build a prosperous, powerful, just and civilized society for all citizens. This renovation programme is expressed in the shift from a subsidy-based economic mechanism to a market-oriented one, the development of an open, multi-sector, and socialist-oriented economy, under State management.

Educational reform in Viet Nam is intricately linked to this major national initiative whose goals require a supportive, reinforcing education programme. The existing socio-economic, political and cultural climate of the country call for a redesign of educational objectives, contents and methods, in order to meet the human resource needs for the projected industrialization and modernization period. The aim is to complete the basic modernization and industrialization of the country by the year 2020. Viet Nam seeks to join with the international community, while still preserving and developing its national traditions.

Reforms to curricula have come about not only due to recognition by the government of these global pressures, but also due to the demands of teachers, pupils and parents who are aware of the outdated nature of the curriculum and the need for on-going curriculum change. Previously, the curriculum had been designed to endure within a long-term perspective: the primary curriculum for about twenty years; and the secondary for over ten years. This is therefore only the third reform, the first took place in the 1950s, the second, in the 1970-80s.

Educational aims

In the draft Education Act (submitted to the National Assembly in December 1998) the national educational aims are broadly stated as:

Forming and fostering the personality, quality and ability of citizens; training working people who: are faithful to the ideal of national independence and building of a fair and civilized society; are moral, dynamic and creative; know how to preserve and promote the cultural values of the nation; are receptive and open to all cultures; and have the necessary sense of discipline, organization and

industrious behaviour to meet the requirements for building and defending the nation.

Curriculum development and reform

Curriculum development in Viet Nam is based on three factors: (1) the vision of the country's leaders concerning the economy and society within the next ten to twenty years; (2) educational achievements and curriculum development experiences, based on the country's characteristics; (3) the curriculum development trends and experiences of other countries. Current reforms are based on the following orientations:

- a focus on basic, practical content which can be applied in everyday life;
- an update of content based on scientific, technological and other developments in modern society;
- the renovation of teaching/learning methods in order to help students develop initiative and creativity in learning;
- development of each student's ability, especially the ability and methods for self-learning;
- due consideration for humanistic and international education;
- preservation of the national identity of Viet Nam, while participating in the world community;
- focus on international curriculum goals of *learning to know, learning to do, learning to be, learning to live together.*

THE CURRICULUM ADAPTATION PROCESS

Administrative structures of curriculum reform

The system of curriculum development in Viet Nam is centrally managed by the Ministry of Education and Training (MOET). However, the Centre for the Development of Curriculum and Methods of Education (CDC-ME), established in 1961 under National Institute of Educational Sciences (NIES), is the agency with major responsibility for curriculum research and development (including curricular reform). NIES's extensive curriculum mandate was given when the Minister of Education and Training took the decision to establish a Curriculum Development Board (CDB) and designated NIES as the agency in charge.

- In undertaking the current reforms, the Minister of Education and Training decided to establish the following additional agencies:
- In 1996, a Board of Primary Education Curriculum Development—2000 was set up, consisting of seventy-five members drawn from research agencies or administrations of primary education at central or local level, including universities. During the curriculum reform, this board benefited from a short training course held in Viet Nam by education specialists from the United States of America, Japan and Australia.
- A Council for Curriculum Evaluation consisting of ninety-eight members belonging to twenty-eight educational agencies at central and local levels, including universities. In addition, there is a primary education project: 'Evaluation of mathematics and mother tongue teaching at 4th and 5th grades' supported by the World Bank and co-ordinated by the National Institute of Education.
- In 1998, a Board of Junior Secondary Education Curriculum Development, consisting of twenty-five experts drawn from NIES, universities and departments within the MOET. This Board operates within an Asian Development Bank–Viet Namese Government Project, Junior Secondary Education Innovation (1999–2004). During the realization of the project, two groups of curriculum developers were sent to Germany, Thailand and Australia in order to collect documents about curriculum development and to exchange experiences.

The stakeholder method guides curriculum development and implementation in Viet Nam. Various MOET subject experts, university teachers and outstanding general education teachers are selected for CDB membership. During the development process, experts, professors, administrators, teachers and parents are all invited to provide comments on, or evaluate the curriculum. An evaluation council, established by MOET, is comprised of representatives drawn from central and local level educational administration and universities.

Process of curriculum development

The primary and secondary school objectives are based on the general statement of national aims and the curriculum orientation guidelines. Different subjects are identified and defined for each level by curriculum specialists. Teachers can emphasize or omit parts of subject objectives.

In Viet Nam, the curriculum has traditionally been regarded primarily as a written document which sets up the subject contents, consisting (essentially) of three parts: 1. educational objectives; 2. educational contents for each school year; and 3. curriculum interpretation. However, the view of the curriculum document has changed, resulting in modifications that include: (a) considerations of experiences in foreign countries; (b) the methods, orientation and learning aids; and (c) ways of organizing the assessment and evaluation of student learning outcomes. Also, several new actions are being undertaken: (a) standards for each subject are being designed; (b) some 10-15% of the content now includes a local component (local geography, history, economy, culture); (c) local variations in the national syllabus are being introduced by teachers (i.e. local timetables, local schemes of work, etc.).

Learning methods and approaches

Teaching and learning methods are presently being reformed, with the intention of fostering, under the supervision and guidance of the teacher, self-directed discovery learning, based on each student's individual abilities. This is an attempt to transform traditional teacher-centred approaches, in which students play a largely passive role, and which stifle both the pupils' and teachers' creativity. The curriculum development centres, educational research centres and teacher-training colleges recommend the various learning methods, orientations and approaches

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to be used. The teacher-training colleges serve as moderators and monitors in the use of certain methodologies (discussion, role play, experimental methods, etc.).

CURRICULUM MATERIALS

The State controls the development and writing of various instructional materials for schools. The government directly supports the compilation and development of textbooks and teachers' guides. Books are sold to teachers and students—they are distributed free of charge only to those students who are particularly disadvantaged. At present, a programme of loaning textbooks to primary students in disadvantaged areas is being developed. Private companies only have the right to develop and print non-compulsory reference books for teachers and students.

- The typical procedure for textbook preparation is as follows:
- The National Institute for Educational Science, the Educational Publishing House and the MOET Councils of Subjects jointly select and introduce a list of authors for approval by the Minister in the MOET;
- The Educational Publishing House (an agency of MOET) organizes the writing of textbooks by giving financial support (creating favourable conditions for consulting professionals and experts);
- The Council for Textbooks evaluates the textbook drafts, then submits them to the Minister for approval. Each level of education usually has only one set of textbooks and there is no option for other textbook use.

Apart from textbooks, teachers' guides, exercise books, reference books for teachers and students, and videocassette tapes are produced for each subject. Other learning aids are reviewed by a committee before being produced and supplied to schools. Learning aids are also made from local materials by teachers and pupils themselves, while others are imported (from China, Germany).

EVALUATION

There is a link between the regular tests carried out in the classroom and the periodic tests set by official regulation. The former occur at the end of each important chapter or textbook subject; the latter at the end of the school term or school year. The purpose of examinations at different levels of education is mainly to consider student promotion to a higher class (which is based on the ability to pass the examination) and to inform the parents about progress. The assessment of students is typically based on percentage calculations, or grading (very good, good, fair, weak).

It is recognized that the current method of evaluating and assessing student learning in Viet Nam should be improved, as the current approach does not take into consideration various categories of student achievement. Due consideration has not yet been given to the inclusion of other assessment information (records, files, practice records in the laboratory, etc.) and to a diagnosis of the individual development of students. This easily results in a biased, one-sided attitude toward teaching/learning and achievement (on the part of both the teachers and the students).

Research is now being conducted on how to evaluate students in more essential ways, that is, by using methods that more accurately reflect the curriculum implementation impact at each level of education.

THE PRINCIPLES OF LEARNING TO LIVE TOGETHER AS CURRICULUM CONTENT

In Viet Nam, there is no specific reform relating only to the principles of learning to live together. They may be seen as being part of general reforms. These principles have been translated into objectives for the primary and secondary school based on the national educational goals. These are incorporated into the curriculum through both a cross-curricula approach and extra-curricular activities. The principles are inherent in the content of certain subjects, such as Vietnamese language and literature, civics, history, geography, foreign languages (English, French, Russian). Some aspects of the principles are also included in the sciences (physics, chemistry, biology) and technology.

In both primary and secondary school, the theme of learning to live together is also taught through selected content from several interdisciplinary subjects (i.e. global education, population education, education for environmental protection, technical education, peace education, HIV/AIDS prevention, etc.). Extra-curricular activities can create positive attitudes, mutual understanding, responsibility, etc. (i.e. class meetings, flag saluting, celebrating public days, cultural galas among schools, song and dance competitions, gymnastics, etc.).

SUCCESSFUL ASPECTS OF REFORM

The following may be cited as advances in the process of curriculum reform: (a) incorporation of new ideas and trends relating to the organization and mechanisms utilized in the curriculum development process; (b) efforts to raise the scientific level and update subject contents; (c) the inclusion of medical and population education, and environmental protection in curriculum contents; and (d) adopting a systematic approach to raising teachers' skills and abilities in subject content and teaching methods.

Progress of reforms to date

- New curricula are being developed for primary, junior secondary and streamed secondary education.
- The primary education curriculum is being tested during implementation. Due to financial constraints, only the mathematics, language teaching and ethnic curricula are presently being implemented.
- The curriculum for junior secondary education is being modified on the basis of experts' comments. The Council of Evaluation will be organized in order to examine the results.
- The curriculum for streamed secondary education is being tested in 180 schools located in all provinces in Viet Nam.

PROBLEMS IN REALIZING REFORMS

- *Resistance to change* shown by administrators, politicians and teachers.
- *Lack of expertise and access to up-to-date information*: innovation has often been undertaken by staff who have not been specifically trained in the field of curriculum development. Thus, new viewpoints on the curriculum have often been applied ineffectively, due to a lack of knowledge and skill in using the right approaches. Attempts to define required knowledge and skills within the curriculum present difficulties due to limited expertise in an area where, previously, textbooks were considered to contain all the necessary knowledge for students. There is limited access to up-to-date methodologies on curriculum (definition, function, structure), and on curriculum development processes; for example, in choosing basic contents and life-related contents (social issues) for each subject.
- *Inappropriate content*: the curriculum as it is taught does not meet the stated aims. It is over-loaded, too academic, lacking in practical components and inconsistent with local realities. Therefore, students are not provided with the necessary knowledge and skills they need to enter the world of work.
- *Ineffective teaching methods*: despite efforts to reform teaching methods, the old methods have remained in use, which prevents changes taking place in students' learning experiences. This is at least partly linked to the fact that teachers are inadequately trained and instructional materials are limited. To date, change in teaching practice occurs mostly in large cities where it is stimulated by high-quality local competitions. There is a need both for more effective organization of pre- and in-service teacher education and for teaching materials that are appropriately designed to meet new teaching/learning approaches

TABLE 1: Who does what in curriculum development?

	CENTRAL LEVEL • MINISTRY • LOCAL • CURRICULUM CENTRE • CENTRAL EXAMINATION BOARD	**REGIONAL/PROVISIONAL LEVEL** • LOCAL AUTHORITIES • INSPECTORS • TEACHER COLLEGES	**SCHOOL LEVEL** • HEADS • TEACHERS • COMMUNITIES
AIMS AND OBJECTIVES	Drafts national aims and objectives in detail; Completes aims and objectives after receiving feedback from regional levels.	Makes remarks and comments on pre-defined aims, feedback to the central level; Helps teachers understand the aims.	Makes aims and objectives effective; Interprets aims and objectives to pupils.
CURRICULUM PLAN	Drafts curriculum framework, syllabus and decides timetables, teaching plan; Completes them after receiving feedback from regional level.	Makes remarks and comments upon the drafted curriculum framework, feedback to the central level; Updates, if necessary, the national syllabus; Creates local timetables.	Makes schemes of work; Implements curriculum plan.
METHODS AND APPROACHES TO LEARNING	Recommends methods and approaches to be used; Training of trainers (key teachers from regional level) in the use of advanced methodologies.	Trains teachers in the use of suitable methodologies.	Practises various methodologies; Selects approaches related to local cultural community life.
MATERIALS	Commissions and writes textbooks, teachers' books, exercise books, references; Organizes researching and production teaching.	Gives guidance using materials; Initiates locally relevant materials.	Uses textbooks, teachers' guides; Chooses references, exercise books and recommends parents to buy them; Uses (or ignores) materials from environmen
EVALUATION AND EXAMINATION	Produces revision guidance handouts for baccalaureate examinations at secondary school; Makes test questions for baccalaureate examinations at secondary school.	Trains teachers on how to supervise exams and to evaluate; Evaluates school and teachers activities and sets standards; Sets some local examination (for LSS, Primary).	Evaluates growth of pupils (knowledge, behaviour, health, etc.); Sets all internal tests and examinations; Marks work and keeps records according to certain principles.

TABLE 2. Primary education teaching periods: number per year

		Grade/Year				
	Subject	1	2	3	4	5
Compulsory	1. Vietnamese language	363	330	297	264	264
	2. Mathematics	132	165	165	165	165
	3. Morals	33	33	33	33	33
	4. Nature and society	33	33	66		
	- Science	66			66	66
	- History	33			33	33
	- Geography	33			33	33
	5. Technology	33	66	66	66	66
	6. Music	33	33	33	33	33
	7. Art	33	33	33	33	33
	8. Physical education	66	66	66	66	66
	9. Health	33	33	33	33	33
	Total	759	792	825	825	825
Optional	10.Foreign language			66	66	66
	11. Information			66	66	66
	12. Club activities			66	66	66
	Total			Max 132	Max 132	Max 132

TABLE 3. Lower secondary education curriculum: periods per year

		Grade/Year			
	Subject	6	7	8	9
Compulsory	1. Vietnamese language & literature	132	132	132	132
	2. Mathematics	132	132	132	231
	3. Citizenship education	33	33	33	33
	4. History	99	99	99	99
	5. Natural sciences	99	99	165	165
	6. Technology	66	66	66	66
	7. Music	33	33	33	16.5
	8. Art	33	33	33	16.5
	9. Foreign language	99	99	99	99
	10. Physical education	66	66	66	66
	TOTAL	792	792	858	858
Optional			Max. 66	Max. 66	Max. 66

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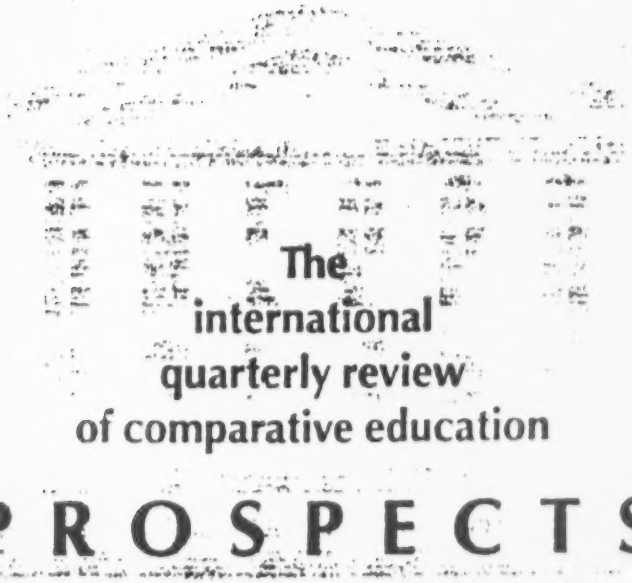

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